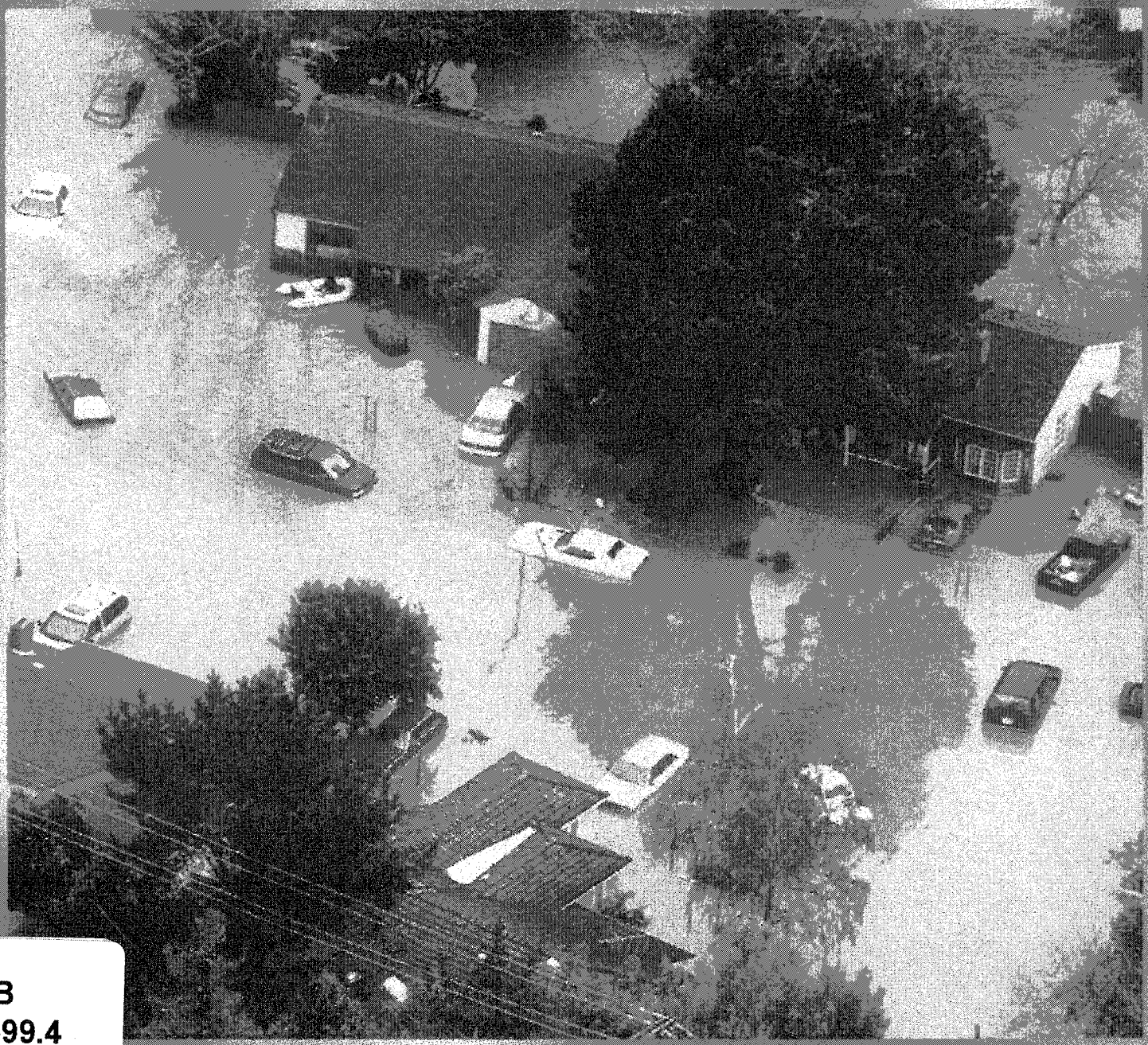
REPORT ON FLOODING AND FLOOD RELATED DAMAGES IN SANTA CLARA COUNTY FEBRUARY 2-9, 1998



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Santa Clara Valley Water District

Santa Clara Valley Water District

MEMORANDUM

TO: Distribution

FROM: James C. Wang
Jeff Micko

SUBJECT: Revised February 1998 Flood Peak Flowrate for Streamflow Gage No. 83—Upper Penitencia Creek at Dorel

DATE: October 13, 2004

Based on the most recent review of the subject Streamflow Gage No. 83 provided by the Water Supply Management Division's Operations Planning and Analysis Unit, the 1998 flood peak should be revised to 3,140 cubic feet per second which was recorded at 3 a.m. on February 3, 1998. It should be noted that the quality of the recorded peak flow should be considered poor.

Attached is the supporting document relating to the updated information.

Engineering Unit Manager
Hydrologic Engineering and Geomorphology Unit

Engineering Unit Manager
Operations Planning and Analysis Unit

Attachment

Distribution:

All Available 1998 Flood Reports
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M. Klemencic
K. Stumpf
G. Fowler
B. Firth (COE-SF)
S. Bui (CWP)

cc: J. Wang, W. Chang, N. Lee, J. Micko

ls:jm

Santa Clara Valley Water District

MEMORANDUM

TO: Jim Wang

FROM: Mark Merritt

SUBJECT: Extension of Penitencia Creek at Dorel Rating Curve for 1998 Peak Flow

DATE: September 27, 2004

Following a public meeting with the Guadalupe Coyote Resource Conservation District (GCRCD) on August 30, 2004, questions were raised as to the peak flow recorded at Station 83, Penitencia Creek at Dorel Drive for the February 3 event of 1998. Two peak discharge values have been released for the event, one that was published as preliminary data in the District report on Flooding and Flood Related Damages in Santa Clara County, February 2-9,1998 (1998 Flood Report), and the other following review and extension of the base rating curve. The 1998 Flood Report published a preliminary peak discharge of 1,826 cubic feet per second (cfs) for the February 3 event. This peak of 1,826 cfs was recorded by the District's real-time radio telemetry system and was made available as preliminary data. Following the customary annual records review for the station, a decision was made to extend the base rating curve and the preliminary discharge estimate of 1,826 was revised upward to 3,140 cfs.

This memo describes the review and validation of the methods employed to extend the base rating curve for streamflow station 83, Penitencia Creek gaging station at Dorel Drive (Station 83). This memo also describes the accuracy of the revised peak discharge.

METHODS

Upon review of the upper-end of base rating 1, it was noted that the rating curve made an uncharacteristic concave upward bend. This upward bend was based largely on slope-area (SA) measurements conducted by the U.S. Geological Survey (USGS). Both electronic and hand-drawn versions of base rating 1 and the extended portion are attached for review. In the early 1990s, the District hired Pearce Hydrology to perform records and rating curve review of key District streamflow stations including station 83. Pearce Hydrology noted that the upper-end of base rating 1 should not exhibit this sharp upward curvature, and recommended simply extending the base rating 1 by use of the standard scale-offset method as described by Johnson, 1952.

The scale-offset method relies on an artifact of log-log curves, that when applied, has the result of straightening the curve which allows a better approximation of the extrapolated portion of the curve. The USGS does not advise extending the curve any more than twice the highest discharge measurement using a scale offset. Review of the scale offset applied by Pearce Hydrology confirmed a scale-offset of 2.31 feet and is presented in the attached worksheet. For ease of hand plotting, the calculated scale-offset may be rounded to the nearest foot and has the effect of straightening the rating curve. A 2-foot offset was applied to base rating 1 and was extended up to a stage of 8 feet at 3,600 cfs and is now referred to as rating 2.

ACCURACY ESTIMATED PEAK

The highest discharge measured at the station was 401 cfs at a recorded stage of 4.93 feet was obtained in March of 1995. An SA measurement of 1,500 cfs at a stage of 6.2 feet was performed in January of 1967. Both of these measurements plot well on base rating 1 and were used to define the

extended rating 2. It should be noted that the SA measurement performed in 1982 was not used because of the questionable shape of the curve as noted above. It should also be noted that the station may experience a considerable draw-down effect which will influence the accuracy of the recorded peak. Finally, the peak of 3,140 cfs established by the offset method is just beyond the accepted two times the highest measured discharge. Until more definition of the upper-end of the rating is established based on recent measured discharge, the estimated peak of 3,140 cfs at a stage of 7.76 feet must be considered poor.

If you have any questions or would like to discuss in more detail, please let me know.

Assistant Engineer II
Operations Planning and Analysis Unit

Attachments: Scale Offset Worksheet
Excel Comparisons of Ratings 1 and 2
Hand-Drawn Curves of Ratings 1 and 2

cc: J. Micko, K. Stumpf, D. Daves, S. Siegel, J. Nam, W. Chang

mm:ls

Scale Offset Calculation by Johnson Method
Station 83, Upper Penitencia Creek at Doral
09/21/2004

$$e = (G_1G_2 - G_3^2)/(G_1 + G_2 - 2G_3) \quad \text{(eqn 1)}$$

$$Q = P(G - e)^b \quad \text{(eqn 2)}$$

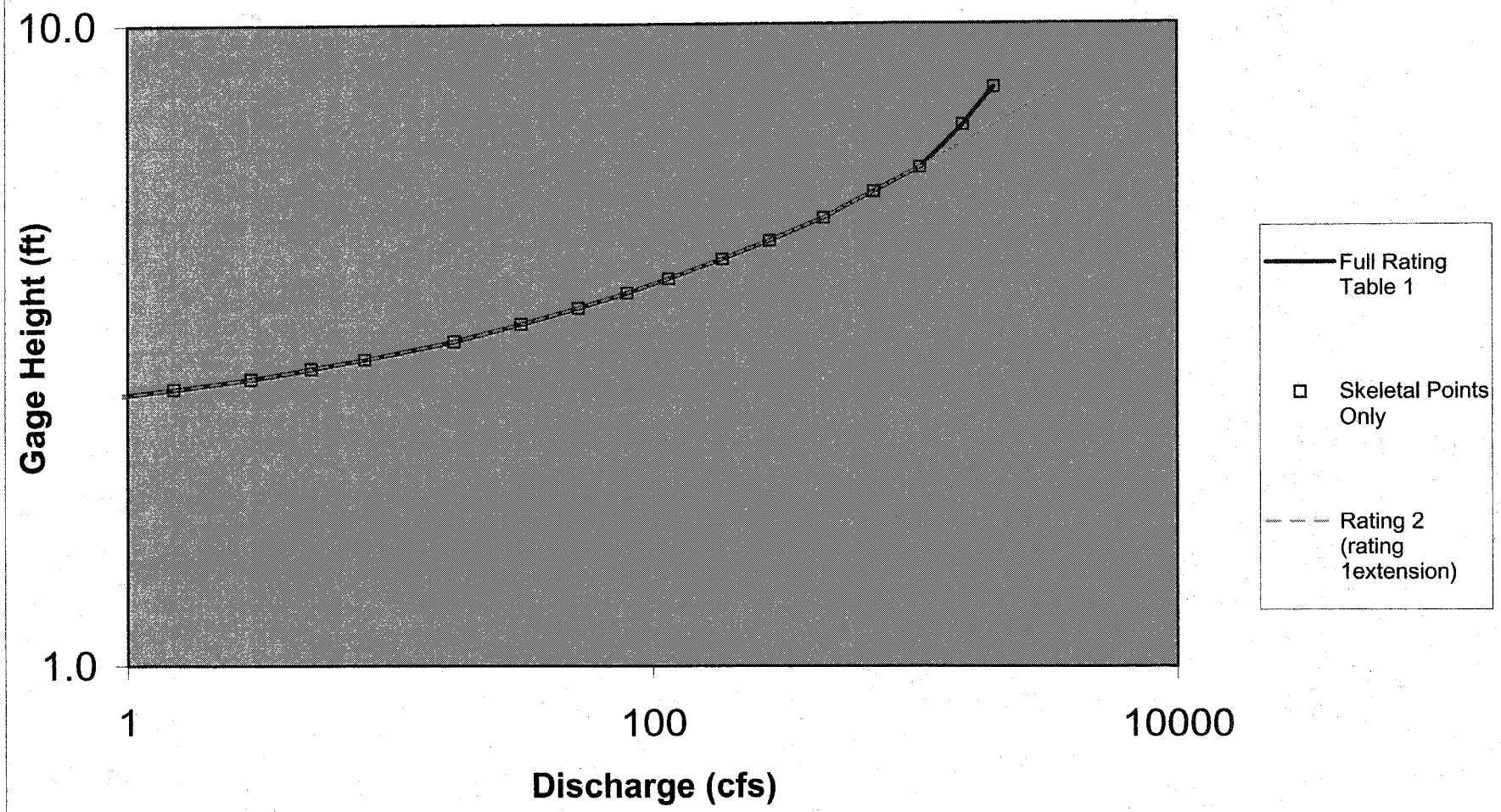
e	Scale offset
G_1	Lowest gage height on rating (ft)
G_2	Heighest gage heigh on rating (ft)
G_3	Middle gage height on rating associated with Q_3 (read from curve or rating table)
Q_1	Discharge at G_1
Q_2	Discharge at G_2
Q_3	Discharge associated with G_3
	where
	$Q_3 = \sqrt{Q_1Q_2}$ (eqn3)
P	y intercept when (G-e) = 1
b	slope of logaritmic stage-discharge rating

e round	e	Q_1	Q_2	Q_3	G_1	G_2	G_3	G = 1 + e	P [Q when (G - e) = 1]	b	Peak Ght	$Q = P(G - e)^b$	Comment
2	2.39	1.01	400.70	20.12	2.65	4.90	3.20	3.00	8.00	3.20	7.76	2170	From Rating 1, Pearce rating - upper end subject to well draw-down (-2.00 scale offset)
2	2.04	1.01	799.3	28.41	2.65	4.9	3.36	3.00	8.00	3.20	7.76	2170	From Rating 1, Pearce rating - upper end subject to well draw-down (-2.00 scale offset)
2	2.31	1.5	1150	41.53	2.7	6	3.51	3.00	8.00	3.20	7.76	2170	From Rating 2 (Rating 1 extension)

b derived graphicall from hand drawn curve between the 3rd and 4th log cycle on horizontal axis

Techniques for Water-Rsources Investigations, Discharge Ratings at Gaging Stations, Book 3 Chapter A10

Station 83, Upper Penitencia at Doral
Rating 1 and 2 Comparisons

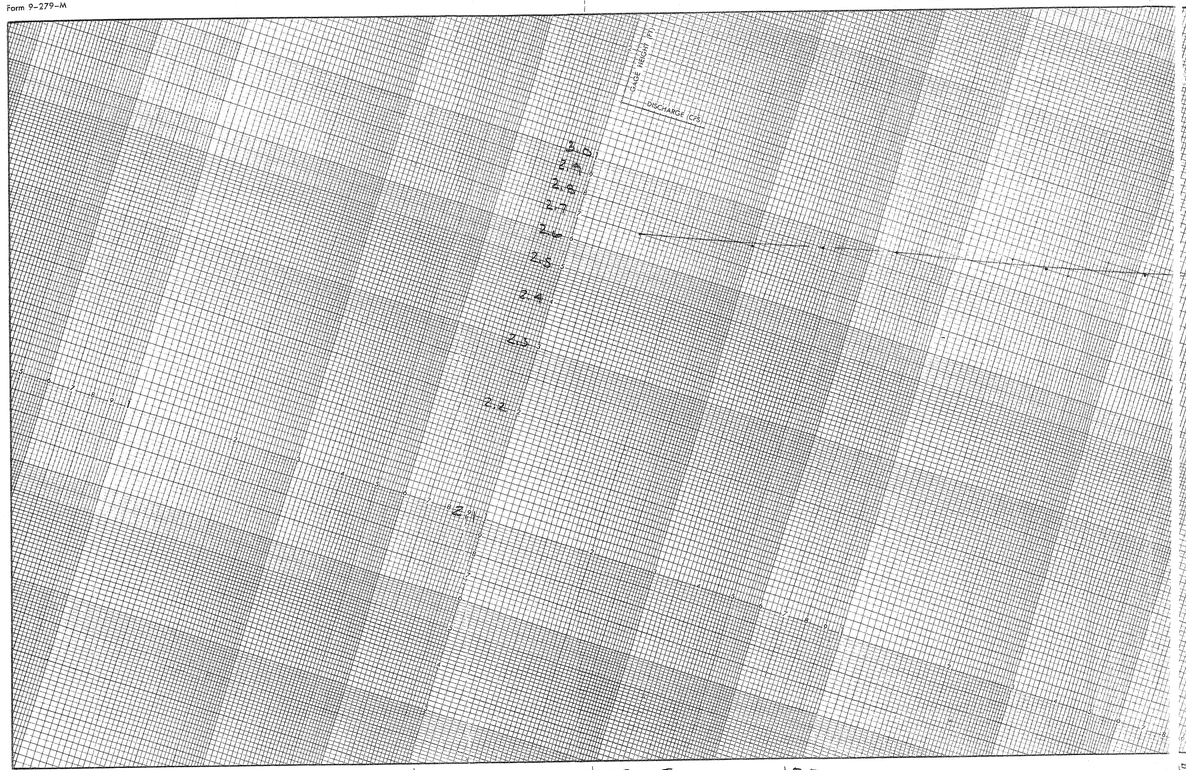


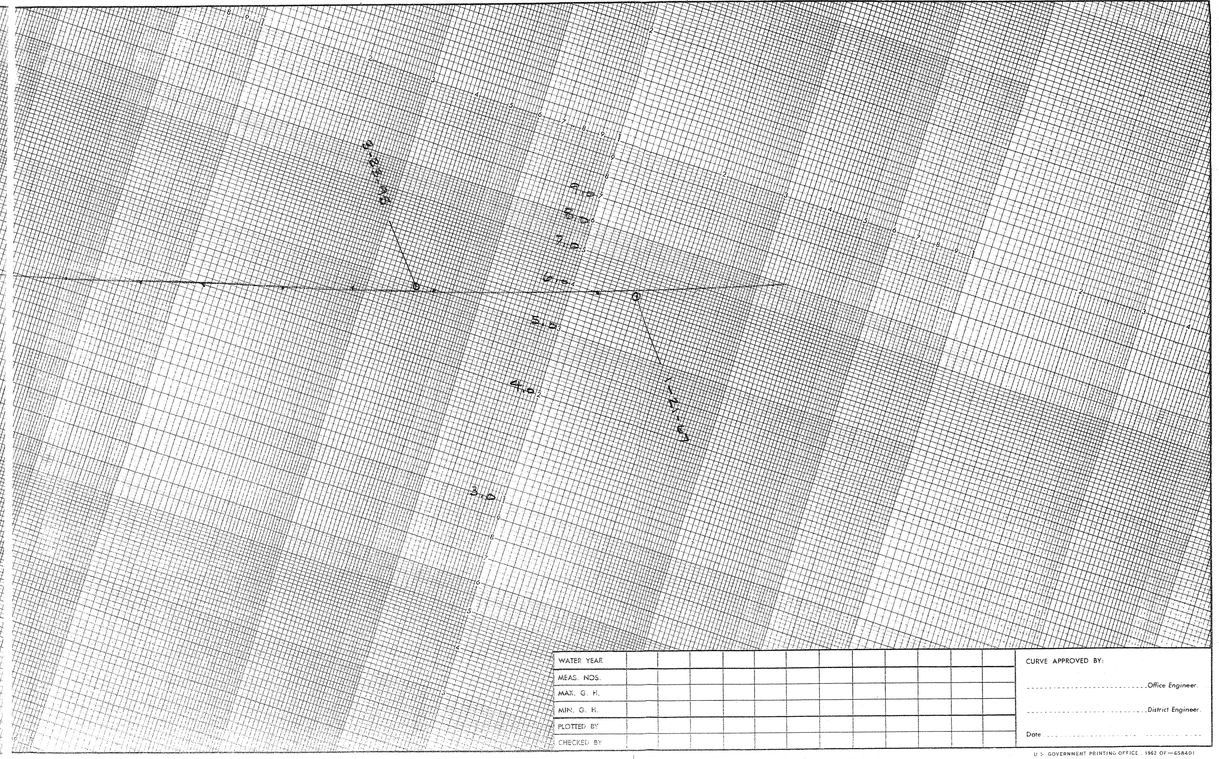
HAND DRAWN SKELETAL POINTS

Form 9-279-M

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

RATING CURVE FOR UPPER PENITENCIA AT DOREL, RATING #2 (1 EXTENSION) STATION NO. 83





WATER YEAR												
MEAS. NOS.												
MAX. G. H.												
MIN. G. H.												
PLOTTED BY												
CHECKED BY												

CURVE APPROVED BY:

.....Office Engineer

.....District Engineer

Date .....

U.S. GOVERNMENT PRINTING OFFICE : 1962 OF—658601

UPPER PENITENCIA @ DOREL, SF 831.0 SCALE OFFSET = 2.0

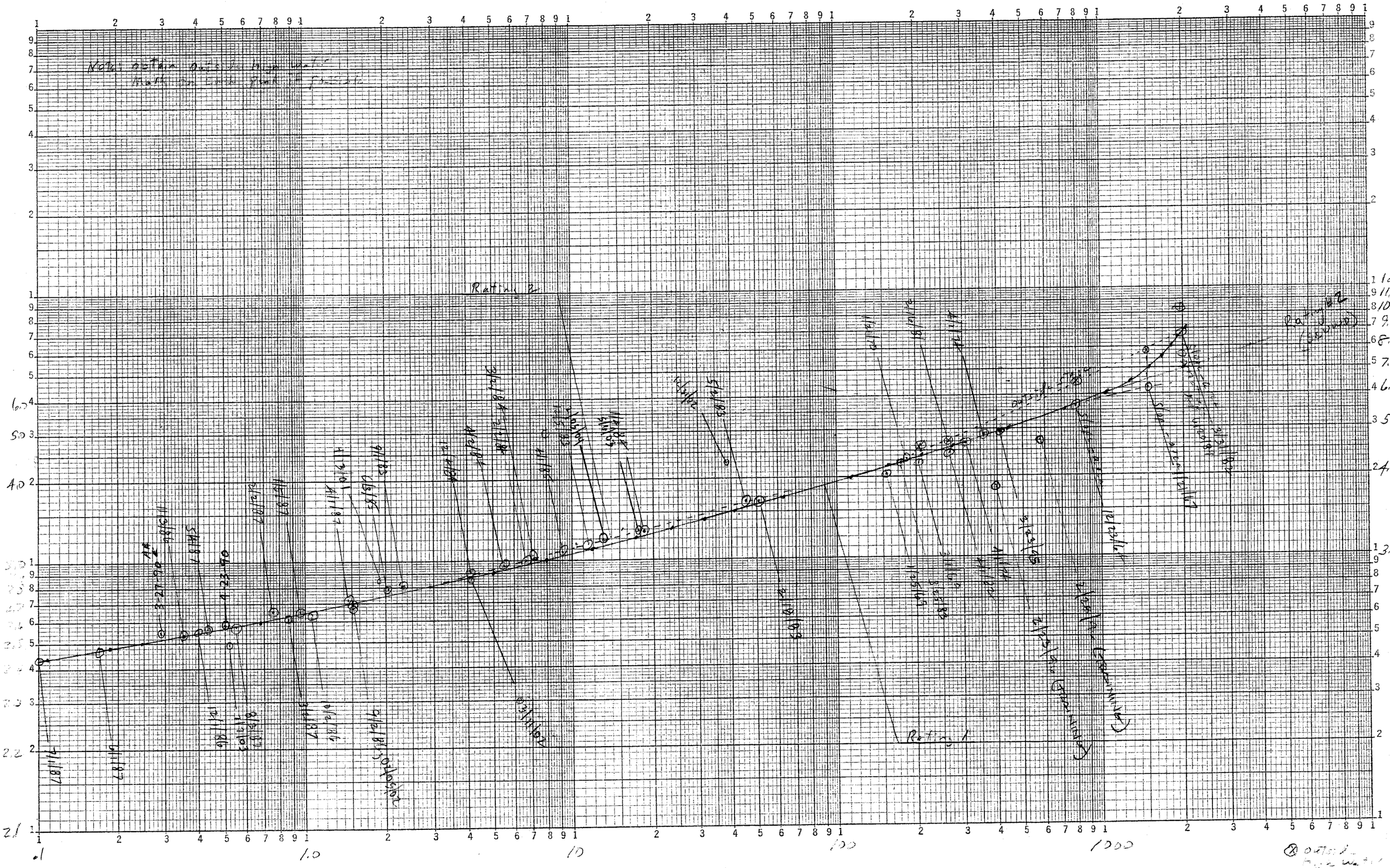
10.0 100.0 1000 10,000

PZF 2.31 - 6/1/87

PZF = 2.11 (01/22/02)

* Drawdown effect

D.S. = 4.28



Dover Penitencia Creek at Dorel Drive

Station 83

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SANTA CLARA VALLEY WATER DISTRICT

REPORT ON FLOODING AND FLOOD RELATED DAMAGES IN SANTA CLARA COUNTY

FEBRUARY 2 TO 9, 1998

Prepared by

Maria Matthews
Flood Management Policy and Planning Unit

With Assistance From

Hydrology and Geology Services Unit

Hydrologic Systems Section

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R10924

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INTRODUCTION

In fall 1997, the publication of scientific data by such agencies as the National Climate Center and the Scripps Institute indicated the potential for a significant "El Niño" event during the 1997-98 winter season. The El Niño phenomenon produces abnormally high sea surface temperatures at the equatorial Pacific. This condition can have substantial worldwide weather implications. In the United States, an El Niño event will often produce below normal precipitation in the northern portion of the United States and above normal precipitation in the southern portion. In September 1997, Santa Clara Valley Water District (District) staff met with Mr. Norm Hoffman, the meteorologist in charge for the National Weather Service to obtain a briefing on the potential of the El Niño Southern Oscillation (ENSO) on the forthcoming winter season. Much media attention had been devoted to describing the potential for a considerably severe winter in the southern portion of the United States. Mr. Hoffman indicated the 1998 ENSO phenomenon had the potential to produce up to 200 percent of our average rainfall volume during the 1997-98 rainfall season.

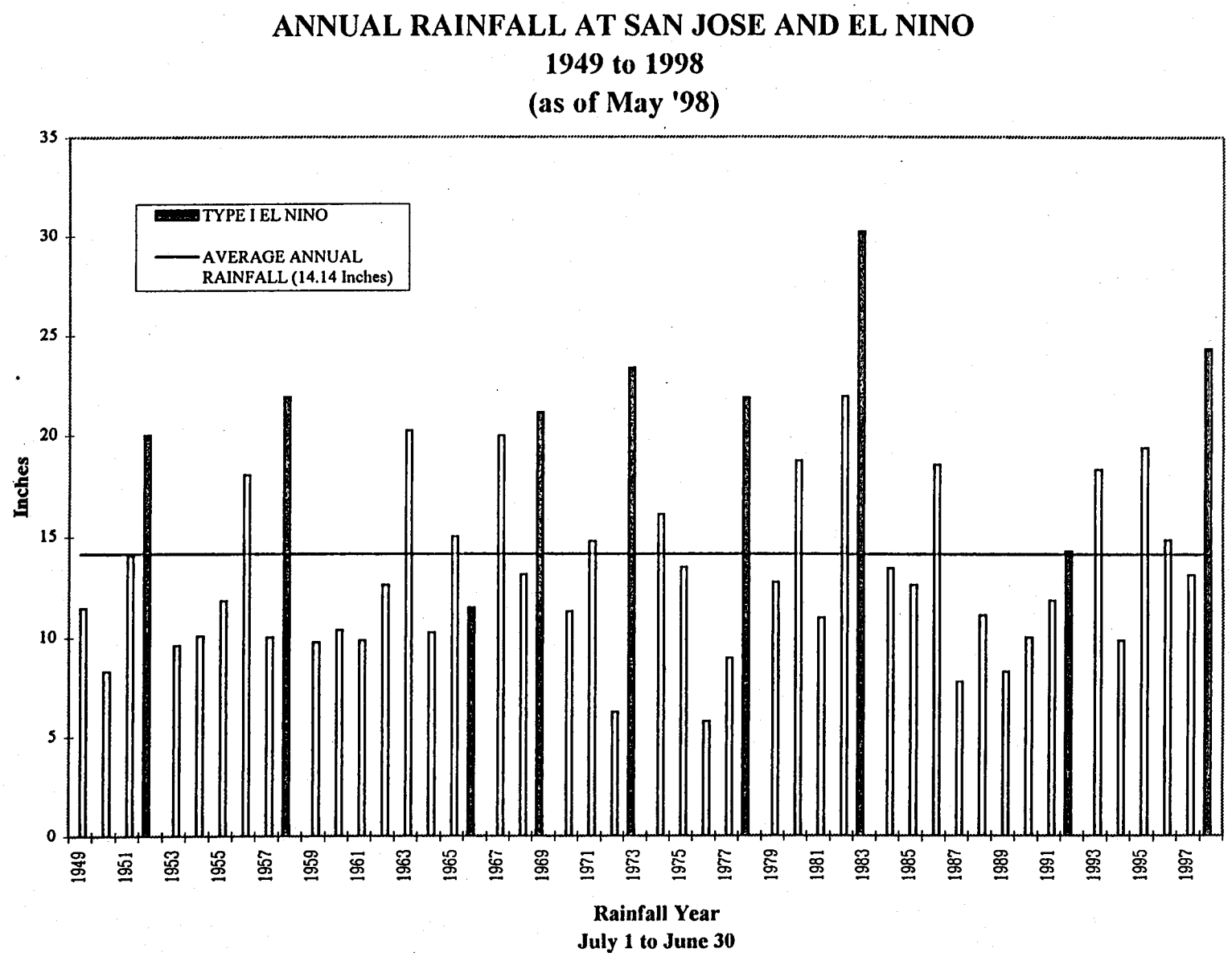
Since 1949, there have been nine El Niño events including 1997-98. Annual rainfall in San Jose, including the El Niño years, is shown in Figure 1. Seven of those El Niño years produced above average rainfall, one year was average (1992), and one was below average (1966). The District has experienced significant flooding during both El Niño and non-El Niño years.

A major Pacific storm carrying subtropical moisture swept over California on Sunday, February 1, and Monday, February 2, 1998. In the early morning hours of February 3, several creeks and rivers in Santa Clara County overtopped their banks causing flooding to many neighborhoods. The State Office of Emergency Services declared a state of emergency in Santa Clara County, as well as in various cities within the county. The heavy rains caused an estimated $20 million in damage in Santa Clara County. The City of Palo Alto was one of the most severely affected communities. San Francisquito Creek, between Santa Clara County and San Mateo County, overbanked causing record flooding throughout a large portion of Palo Alto. Most west valley streams were flowing with their banks full. Calabazas Creek overflowed into adjacent homes and businesses in Cupertino, San Jose, and Santa Clara. There were several street and highway closures throughout Santa Clara County, including Highway 101 and Highway 87, major commuter arteries. The Red Cross opened a shelter at Independence High School in San Jose for residents evacuated from the Golden Wheel Mobile Home Park, which was flooded by local drainage inadequacies and an overbanking Coyote Creek. An additional emergency shelter was opened at Cubberly Community Center in Palo Alto. Flooding occurred on February 7 as well, affecting neighborhoods in San Jose and Cupertino.

Approximate flooded areas have been mapped and are included in Appendix A for general flooding information only. A few representative photos are also included in Appendix A. Photo identification numbers, example: S5039-75, follow the description of most of the photos.

The statistical recurrence frequencies of peak flows for the creeks that flooded in the two storm periods varied from less than 5 to near 100 years. Throughout the report, reference is made to "4-year floods," "10-year floods," or "100-year floods." This is a shorthand description of flood events and does not mean that flooding will occur every 4 years, 10 years, or 100 years, but rather that this frequency of occurrence could be expected statistically on the average over a period of many years. The frequency is also often expressed as a percentage. A 100-year flood is said to be a 1 percent flood, a flood having a 1 percent chance of occurring in any year. A 100-year criterion is commonly used for flood protection design. It is estimated that damages would approach $2 billion in Santa Clara County as a result of the 100-year flood or 1 percent event.

FIGURE 1


ANNUAL RAINFALL AT SAN JOSE AND EL NINO
1949 to 1998
(as of May '98)
TYPE I EL NINO
AVERAGE ANNUAL RAINFALL (14.14 Inches)
Inches
0
5
10
15
20
25
30
35
1949
1951
1953
1955
1957
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
Rainfall Year
July 1 to June 30

The District owns and operates ten reservoirs in Santa Clara County having a combined storage capacity of about 170,000 acre-feet. These reservoirs were authorized and built for the purpose of conserving local water resources. The reservoirs have spillways designed to safely carry into the creek channels high flows from upstream but even a full reservoir has a flood attenuating function. The water flowing into the reservoir cannot move through and out the spillway until it has ponded, spread out over the surface of the lake, and thus raised the whole lake level. The result is a delay and a reduction (attenuation) of peak flows downstream of the reservoir. Sometimes reservoirs can reduce the flood threat but at the very least they will attenuate the flood stage.

WEATHER

Weather forecasters on January 30, 1998, warned of a series of strong weather systems poised to pound California one after another Saturday, January 31, through Wednesday, February 4. The National Weather Service issued a flood watch for the Pajaro and Salinas Rivers in San Benito, Santa Clara, and Santa Cruz Counties, and a flash-flood warning was issued February 2 for Santa Cruz, western Santa Clara, and western Monterey Counties. The storms drenched the Bay Area, producing huge ocean swells, major flooding, and mudslides. Up to 9 inches of rain fell over the western Santa Clara Valley between February 1 and 3, as illustrated in Figure 2.

On February 5, with the ground saturated and half of its reservoirs spilling, Santa Clara County prepared for another storm. The upper Calabazas Creek watershed again was the bulls eye of the storm receiving up to 7 inches of rain. Rainfall for February 6 to 8 is illustrated in Figure 3.

Rainfall and streamflow data for the storm period, along with historical data, are contained in Tables 1, 2, 3, and 4.

FIGURE 2

48 Hour Storm Totals
Feb. 1 - 3, 1998

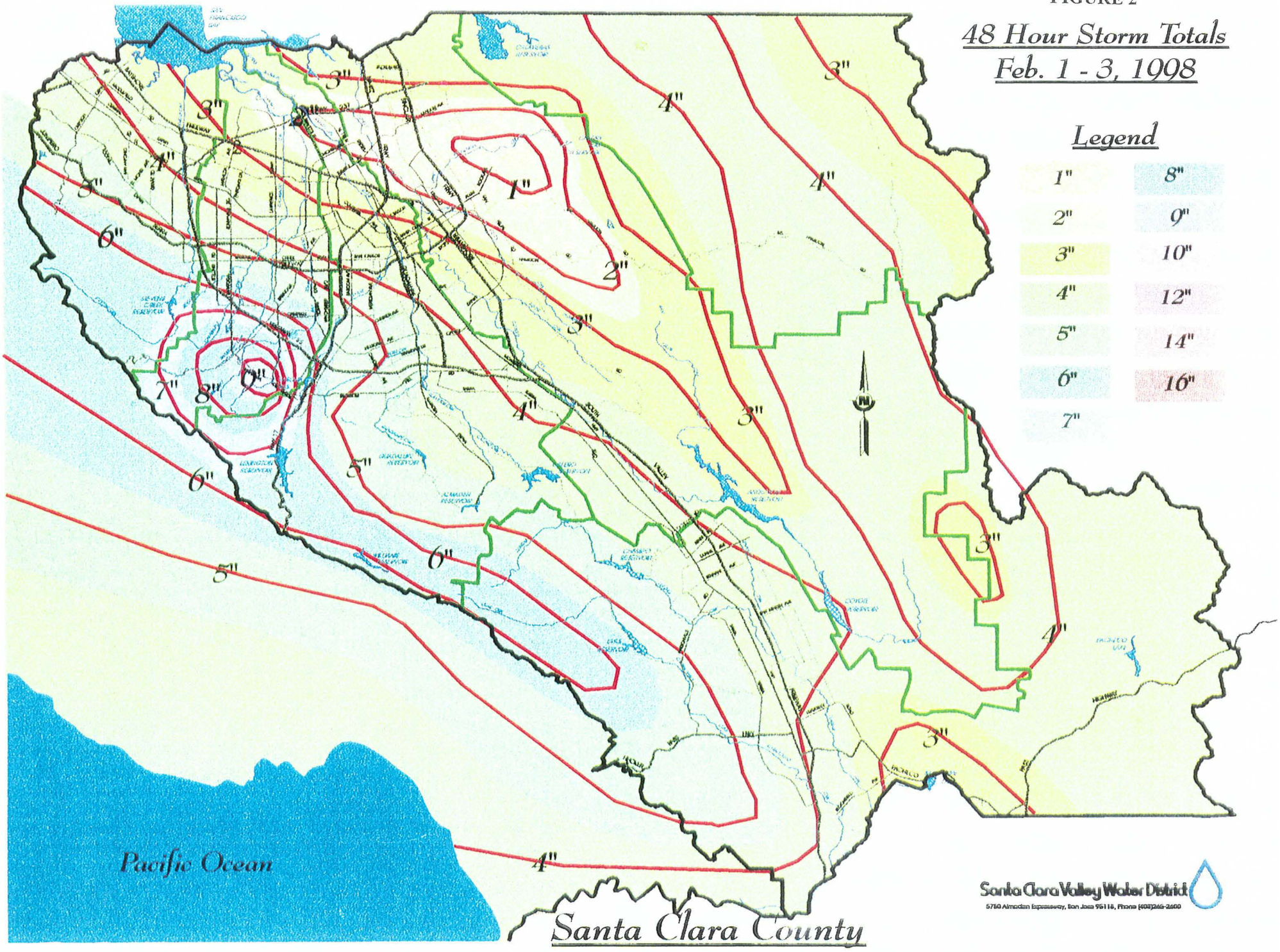


FIGURE 3

48 Hour Storm Totals
Feb. 6 - 8, 1998

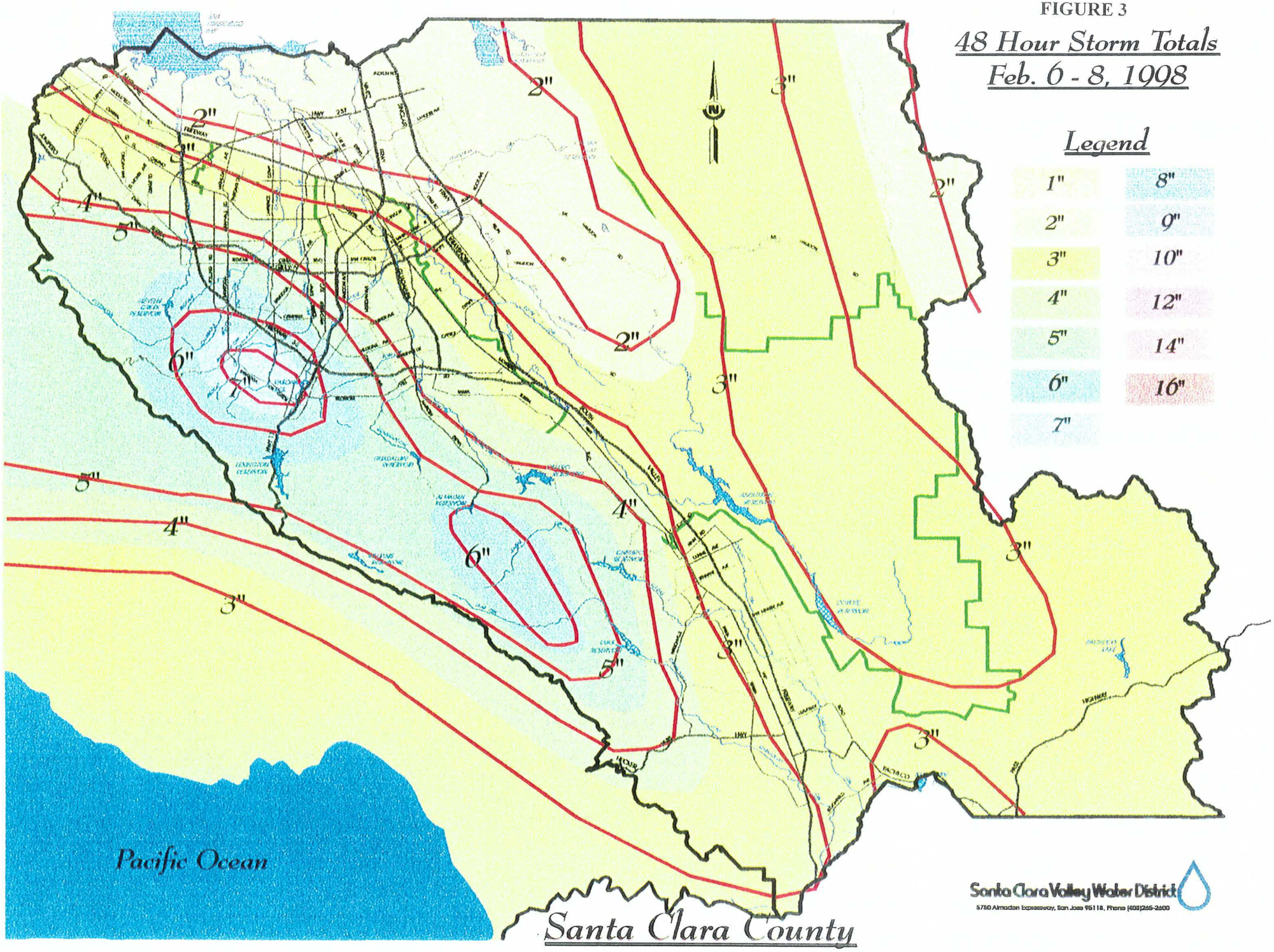


TABLE 1
Maximum Rainfall Amounts and Return Periods
in Santa Clara County for February 2 through 9, 1998

Station	6 Hours		24 hours		48 hours	
	Inches*	Years**	Inches*	Years**	Inches*	Years**
Alamitos	2.05	15	3.50	16	4.09	8
Castro Valley	1.26	<2	2.13	<2	4.02	3
Coe Park	1.46	<2	2.87	2	4.37	4
Coit Ranch	1.81	6	3.39	7	5.16	14
Coyote	1.54	5	2.64	3	4.37	10
Curtner Ranch	1.61	35	2.96	20	3.38	17
Dahl Ranch	2.40	7	4.53	7	5.20	3
Anderson	1.54	3	2.60	3	3.78	4
Lexington	2.48	2	5.28	4	6.46	3
Maryknoll	1.93	75	3.90	55	4.49	15
Mt. Hamilton	1.74	3	3.19	3	4.14	3
Mt. Umunhum	2.24	2	5.00	4	6.92	5
Valley Christian+	3.54	10	7.72	20	8.94	7
Penitencia WTP	0.56	<2	1.06	<2	1.14	<2
Stevens Creek	3.03	25	5.71	33	6.46	9
Uvas	NA***	NA***	NA***	NA***	NA***	NA***
Mountain View	1.02	2	2.36	7	2.64	4
Calero	1.82	2	3.43	4	4.56	4
Palo Alto	1.34	5	2.72	17	3.15	14
City of San Jose	1.53	10	2.71	10	3.19	7
Evergreen	0.95	NA****	1.62	NA****	2.01	NA****
Church Avenue Percolation Ponds	1.26	NA****	2.28	NA****	4.05	NA****
Uvas Canyon County Park	1.97	NA****	3.97	NA****	6.42	NA****
Morgan Hill	1.53	NA****	2.95	NA****	4.53	NA****

+Extreme hourly event occurred (refer to hourly rainfall plots—Figure 6).
*Total rainfall received over 6-, 24-, and 48-hour period.
**Return period (average frequency of occurrence)
***Not available
****Not available—Historical records too short for meaningful return period estimates.

TABLE 2
Historic Maximum Rainfall Events

Station No.	Name	24-Hour Duration			
		Depth (in.)	Year	Frequency (yr.)	Year Records
					Began
1453	San Jose City	4.55	1911	154	1908
2073	Anderson Reservoir	6	1963	145	1951
2066	Johnson Ranch	5.8	1968	47	1968
1523	Peabody	4	1956	39	1932

TABLE 3
Preliminary Peak Flow Values for Various Streams in Santa Clara County
February 2 to 9, 1998

Stream Gage # and Location		Preliminary Peak Flow		Return Period (Years)		1% Event Flow (cfs)	10% Event Flow (cfs)	Historic Peak		Records Began
		02/02-05/98	02/06-09/98	02/02-05/98	02/06-09/98			Flow (cfs)	Date	
1#	Penitencia at Piedmont	**	**	**	**	4,500	1,500	2,200	04/02/58	1939
16	Alamitos below Almaden Dam	734	702	4	4	3,500	1,300	2,000	12/23/55	1939
17	Guadalupe below dam	16	299	**	15	920	230	—	—	1942
23B	Guadalupe at Almaden Expwy.	6,725	3,980	8	3	14,300	7,200	8,400	01/22-30/83	1975
25#	Saratoga at Pruneridge	1,160	**	2	**	4,100	2,700	2,300	02/19/80	1939
26A	Calabazas at Wilcox	2,970s	2,448s	70s	25s	3,100	2,000	3,280	02/14/86	1976
33#	Hale near Magdalena	**	**	**	**	1,100	460	—	—	1946
32A#	Permanente at Berry	**	**	**	**	2,800	1,500	—	—	1962
44	Stevens below dam	1,397	985	3	2	5,500	2,800	1,420	12/23/55	1930
51	Ross at Cherry	1,158	1,114	4	4	2,200	1,500	1,550	01/30/68	1957
58	Coyote at Edenvale	2,714	4,281	5	9	15,000	4,800	10,000	02/10/22	1916
59	Los Gatos at Lark	613	622	4	4	7,000	1,600	2,800	02/19/86	1970
67	Los Gatos below Lexington	361	552	3	4	6,600	1,600	3,540	04/02/58	1930
69#	Llagas Creek below Chesbro	**	**	**	**	3,900	500	3,190	04/02/58	1950
73	Canoas at Almaden Expwy.	1,400***	830***	**	**	2,400	**	—	—	—
77	Coyote above Coyote Dam	10,485	3,600	15	3	21,800	8,600	—	—	1983
81#	Pacheco near Dunville	**	**	**	**	24,700	11,400	—	—	1983
82	Coyote near Madrone	498	3,833	9	30	15,000	550	25,000	*03/07/11	1902
83	Upper Penitencia at Dorel	1,826	922	18	6	4,300	1,300	—	—	1988
91	Saratoga at Saratoga-USGS	2,480	**	20-25	**	3,500	1,900	2,730	12/22/58	1933
93	San Francisquito-USGS	7,600+	4,967	85f-100g	15/20f-20/25g	7,860f-6,925g	4,050f-3,760g	5,560	12/22/55	1931
	Matadero at Ash-USGS	2,824	899	70-80	5	3,000	1,360	1,710	01/26/83	1952
	Guadalupe R. at St. John-USGS	7,541	5,651	5	3	17,000c	10,200c	11,000	03/10/95	1930

NOTE: All 1% and 10% flow rates are based on the 1976 Design Flood Flows Manual except other values noted by f(FEMA), g(USGS), and c(COE). Data Source: WRM Technical Services. *Historic peak was recorded before Anderson and Coyote Dams were built. **Not available. ***Estimated value. #Nonalert gages. sSpilled upstream. +USGS Estimate (7,100-8,100 cfs)

FLOODING—FEBRUARY 2 TO 7, 1998

The early February storm caused widespread flooding throughout Santa Clara County but was particularly intense in the west side watersheds. San Francisquito Creek experienced record flooding with flows estimated nearly 30 percent greater than the previous record in 1955.

Streams in Santa Clara County are extremely responsive to rainfall as shown in Figures 4 through 7. These figures are recorded rainfall and recorded or reconstituted streamflow for four watersheds which experienced flooding.

Many creeks overflowed and caused flooding due to the intense rainfall. The following is a brief description of the areas impacted. Maps of the flooded areas are in Appendix A.

NORTHWEST ZONE

San Francisquito Creek

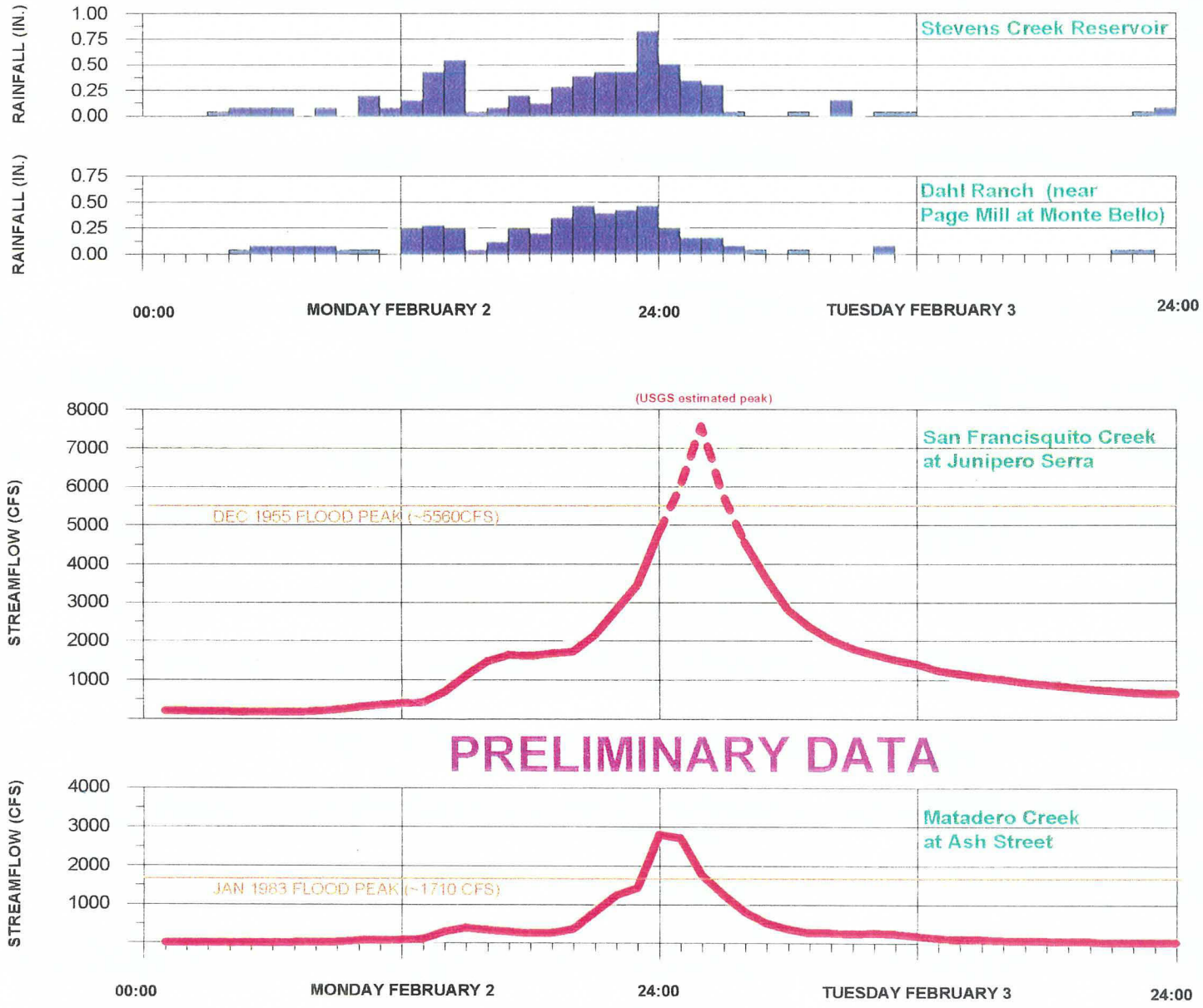
San Francisquito Creek overbanked at numerous locations in Santa Clara County: upstream of the Middlefield Road bridge at Byron Street; at the Seneca Street and Palo Alto Avenue intersection; upstream of the Chaucer Street bridge; immediately downstream of Highway 101; further downstream of Highway 101, where the golf course and baseball field meet; and at Palm Street. More than 400 homes in Palo Alto were flooded. In East Palo Alto, 325 people were evacuated. The flowrate at the United States Geological Survey (USGS) streamflow station near the Stanford golf course was estimated by the USGS to be between 6,500 cubic feet per second (cfs) and 8,000 cfs. This is the highest flowrate ever recorded at that station since its installation in the 1930s. The previous historic record was 5,560 cfs in 1955. The Palo Alto Unified School District closed all schools for the day on February 3. Duveneck Elementary, Escondido Elementary, and Jordan Middle Schools were flooded. Classes at Stanford University were canceled for the day. Commuting and transportation were severely limited due to the closure of the Bayshore Freeway (Highway 101) and other major arteries. Several major underpasses flooded, including both Oregon Expressway and Embarcadero Road under Alma Street, University Avenue under the railroad tracks, and El Camino Real under University Avenue.

Adobe Creek

Several properties in Los Altos and Los Altos Hills sustained damage due to flooding from Adobe Creek. Shoup Park and the community center were flooded to an approximate depth of 5 inches. At the City of Los Altos Redwood Preserve, a wooden vehicle bridge was dislodged from its footings and floated downstream. Fifty feet of wooden wall that forms one bank of Adobe Creek at West Edith Avenue failed and lodged downstream.

FIGURE 4

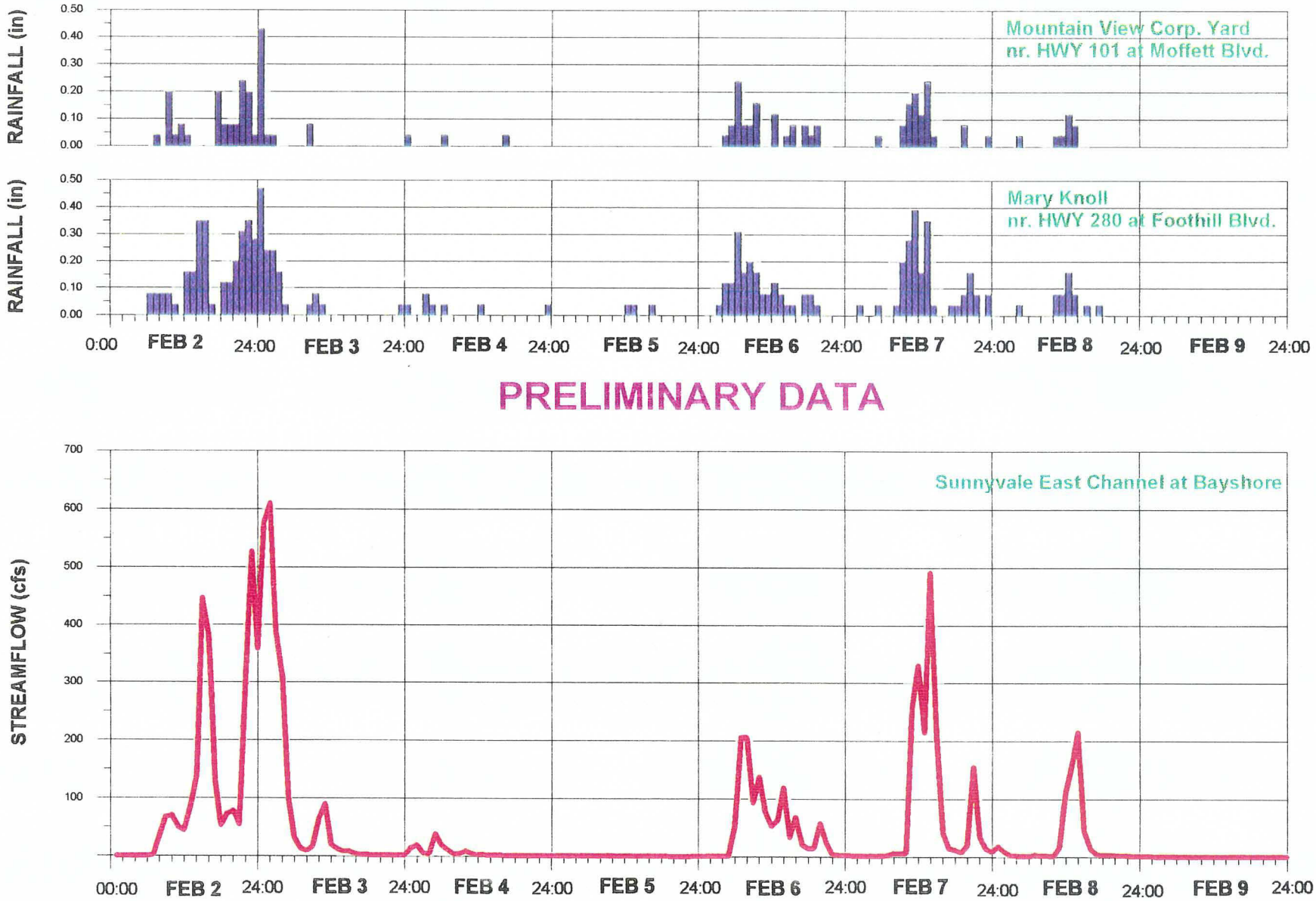
PRELIMINARY RAINFALL/FLOW DATA OF FEB 2 - FEB 3, 1998 FLOOD, PALO ALTO AREA



2/26/98 WRM-Hydrology; Data Source: WRM-Technical Srervices & USGS

FIGURE 5

PRELIMINARY RAINFALL/FLOW DATA OF FEB 2 - FEB 9, 1998, SUNNYVALE EAST CHANNEL



3/10/98 WRM-Hydrology; Data Source: WRM-Technical Services

FIGURE 6

PRELIMINARY RAINFALL/FLOW DATA OF FEB 2 - FEB 9, 1998, CALABAZAS CREEK

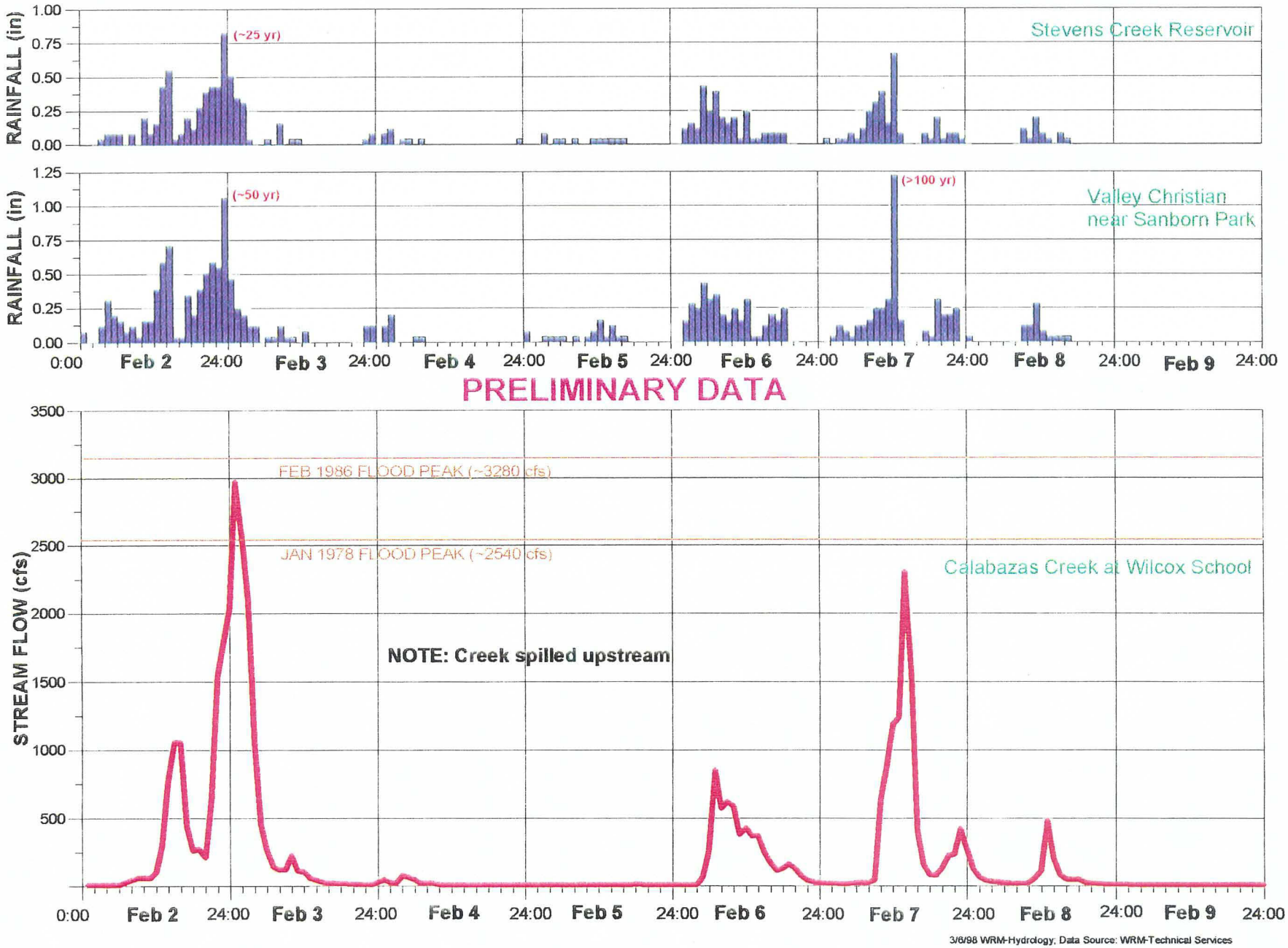
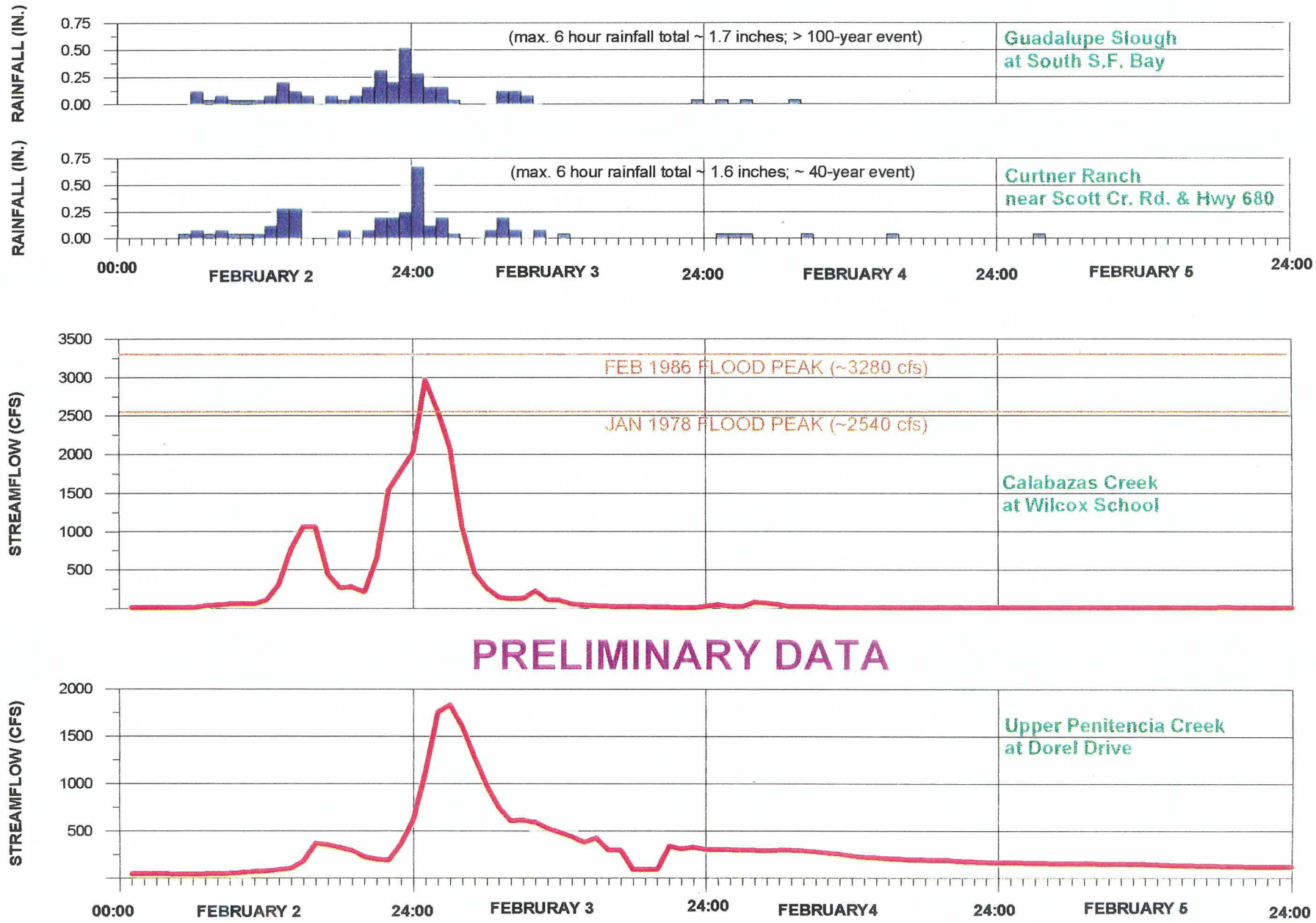


FIGURE 7

PRELIMINARY RAINFALL/FLOW DATA OF FEB 2-FEB 5, 1998 FLOOD, MILPITAS/N. SAN JOSE AREAS



4/2/98 WRM-Hydrology; Data Source: WRM-Technical Services

Hale Creek

Evidence of flooding on Hale Creek was observed at four locations: Covington Avenue, Rosita Avenue, Arboleda Drive, and the intersection of Mt. View Avenue and Raymundo Avenue. Flooding appeared to be limited to the street and to front and back yards.

Permanente Creek

Permanente Creek in the City of Mountain View overbanked the levee downstream of Amphitheater Parkway and upstream of Park Avenue.

NORTH CENTRAL ZONE

Calabazas Creek

Calabazas Creek overtopped its banks twice in February. Overbanking occurred February 2 to 3 at the following bridges: Southern Pacific Railroad, Saratoga-Sunnyvale Road, Bollinger Road, Miller Avenue, Tantau Avenue, Pruneridge Avenue, and Monroe Street. Flooding on February 2 to 3 appeared to be more severe than flooding which occurred on February 7. On February 3, at least seven apartments at the Gardens of Fontainebleau Apartment complex were damaged by water and mud. Several homes in the East Estates neighborhood were also flooded. Three people from the Simms House, a home for low-income residents owned by the City of Cupertino, were evacuated. Water flowed down Stevens Creek Boulevard, flooding lower parking levels at Vallco Fashion Park and entering several businesses. Sears department store suffered some damage. Off of Foothill Boulevard, the Sunny View Retirement home was flooded, and damage was reported at the Foothill Apartments where nine families requested assistance.

Smith Creek

Smith Creek overbanked at Elam Avenue. Areas several blocks away were flooded by local drainage that was prevented from draining due to extremely high water in the creek.

Sunnyvale East Channel

Overbanking and flooding occurred at Duane Avenue and downstream of Highway 237, flooding approximately 26 business and manufacturing properties. Floodwaters went over the levee at Caribbean Drive causing severe erosion on the outside slope and toe of the levee.

San Tomas Aquino Creek

San Tomas Aquino Creek overbanked downstream of Highway 237 flooding Great America Parkway, the 3COM site, and Yerba Buena Way.

CENTRAL ZONE

Guadalupe River

Guadalupe River overbanked near Alma Avenue in San Jose, flooding the Elks Lodge parking area and the Willow Street/Highway 87 underpass. Flows also broke out downstream of Virginia Street, flooding Highway 87 and closing the roadway.

Ross Creek

Ross Creek overbanked at Cherry Avenue flooding the area around Montmorency Drive.

EAST ZONE

Coyote Creek

Floodwaters from Coyote Creek and local drainage systems inundated the Golden Wheel Mobile Home Park. Residents were evacuated to a shelter opened by the Red Cross at Independence High School in San Jose. During the February 8 event, three houses located within the high banks of Coyote Creek, on South 17th Street, were flooded.

Upper Penitencia Creek

Upper Penitencia Creek overbanked at several locations between King Road and Jackson Avenue flooding the park along Cape Horn Drive and several hundred feet along King Road. The creek also overbanked along Penitencia Creek Road flooding the streets around Toyon Elementary School and strewing woody debris.

Calera Creek

Hundreds of homes and apartments in a neighborhood of Milpitas between Dixon Landing Road and San Andreas Drive sustained damage from water flowing out of Calera and Berryessa Creeks and local drainage systems. Fifty to one hundred people were evacuated.

Berryessa Creek

Overbanking occurred at the confluence of Piedmont Creek and Berryessa Creek in Milpitas flooding an industrial area.

Los Coches Creek

Los Coches Creek overbanked at Calaveras Boulevard in Milpitas and flowed down Piedmont Road.

SOUTH ZONE

West Little Llagas Creek

West Little Llagas Creek overbanked at West Main Street and Hale Avenue in Morgan Hill flooding streets and garages along West Main Street.

Tennant Creek

Street flooding was observed on Hill Road at Shafer Avenue, on Conti Way, Katybeth Way, and a low lying park at the end of Conti Way. Tennant Creek overbanked upstream of Maple Avenue, flooding an adjacent field.

Corrallitos Creek

Properties downstream of Colombet Avenue flooded.

East Little Llagas Creek

A field downstream of Monterey Road flooded. At the Seymour Avenue crossing, the creek overbanked and flowed across the road at an approximate depth of 6 inches.

West Branch Llagas Creek

A grouping of about ten houses just north of Day Road on Monterey Highway experienced some flooding from the effects of local drainage trying to reach West Branch Llagas Creek.

Uvas Creek

Fields adjacent to the Pajaro River confluence were flooded.

EL NIÑO PREPAREDNESS

In response to the heightened concerns caused by the El Niño forecasts, in the fall of 1997 General Manager Stanley Williams established a task force of District personnel to implement "extraordinary" winter preparedness actions to ready the citizens of Santa Clara County for a potentially heavy rainfall season.

Task force members met regularly to coordinate efforts toward the goal of winter preparedness. Such efforts included an extensive public outreach program consisting of the "Noah Knows" campaign, sandbag availability, community meetings, and direct notification of the 70,000 property owners who reside within the 1 percent flood hazard area.

The "Noah Knows" campaign has become the cornerstone of the FloodSAFE Program. This award-winning, multimedia campaign focuses primarily on personal safety and property protection.

The primary objective of the "Noah Knows" campaign is to create a basic awareness that floods can happen locally. All aspects of the campaign emphasize calling the 1-888-HEY-NOAH toll-free line for more information. The line gives callers a menu of choices including local sandbag sites, reservoir and stream flow information, and weather forecasts.

Radio spots featured Noah talking about a new round of floods that might hit the Santa Clara Valley. The spots prompt listeners to call the District at the toll-free number to receive more information.

In Santa Clara County, the most widely read newspaper is the San Jose Mercury News. For this reason, nearly all of the "Noah Knows" ads ran in the Mercury News. The print portion of the campaign kicked off in October 1997 with an unprecedented 7-day run on the weather page. Ads appeared on the back pane and full back of county transit buses. Transit advertising is one of the most effective and in-demand methods of outreach.

The FloodSAFE Program also included publicity for the District's free sandbag distribution program. Flyers with maps showing locations of the 26 sandbag distribution sites were developed. Neighborhood-specific sandbag location ads ran in community newspapers. Callers to HEY-NOAH could select a key to get a recorded list of sites in their neighborhoods. During this winter, the District has distributed more than 1 million sandbags.

The District's website, www.scvwd.dst.ca.us, was expanded to provide access under www.heynoah.com. The website added a map of sandbag locations, the 1 percent flood hazard area, and areas with a history of flooding as new items in direct response to the El Niño concerns. Flood safety and flood insurance information and links to other related websites such as the Federal Emergency Management Agency were also made available.

The El Niño Task Force mailed nearly 70,000 postcards to floodplain residents as an effective "extraordinary emergency preparedness action." This was the first time the District had notified all floodplain residents of their potential risk. The card communicated several simple, but key messages as follows:

- If you receive this card, there is a flood risk to your property.
- You live in the (resident specific) flood control zone.
- Your homeowner's insurance policy does not cover flood damage.
- The storm drain system and creek system work together to manage storm water.
- The District does not own all the creeks.
- Dumping in creeks and storm drains is illegal.

El Niño Task Force staff also prepared an analysis of flood hydrograph travel times to assist cities in their emergency notification and evacuations. The analysis was based on the 1995 and 1997 floods for the Coyote Creek and Guadalupe River watersheds. See Figures 8 through 10. Travel times are summarized in Tables 4 and 5. Guadalupe River is the second largest watershed in the county but the time for flood hydrographs to travel through is still relatively short. Coyote Creek is much larger and provides a greater opportunity to track the flood event.

During February, as a result of heavy rainfall, significant flooding occurred at several locations throughout the county. The District activated its Emergency Operations Center to coordinate information, respond to calls from the public, and manage our response effort. The District's Public Information Office provided detailed flood emergency updates regularly throughout the flood. Copies of those updates are in Appendix B.

After the flooding, the task force coordinated the video graphic recording of the events and conducted four postflood community meetings to obtain information about the flooding from the flood victims.

FIGURE 8

GUADALUPE RIVER
JANUARY 1995

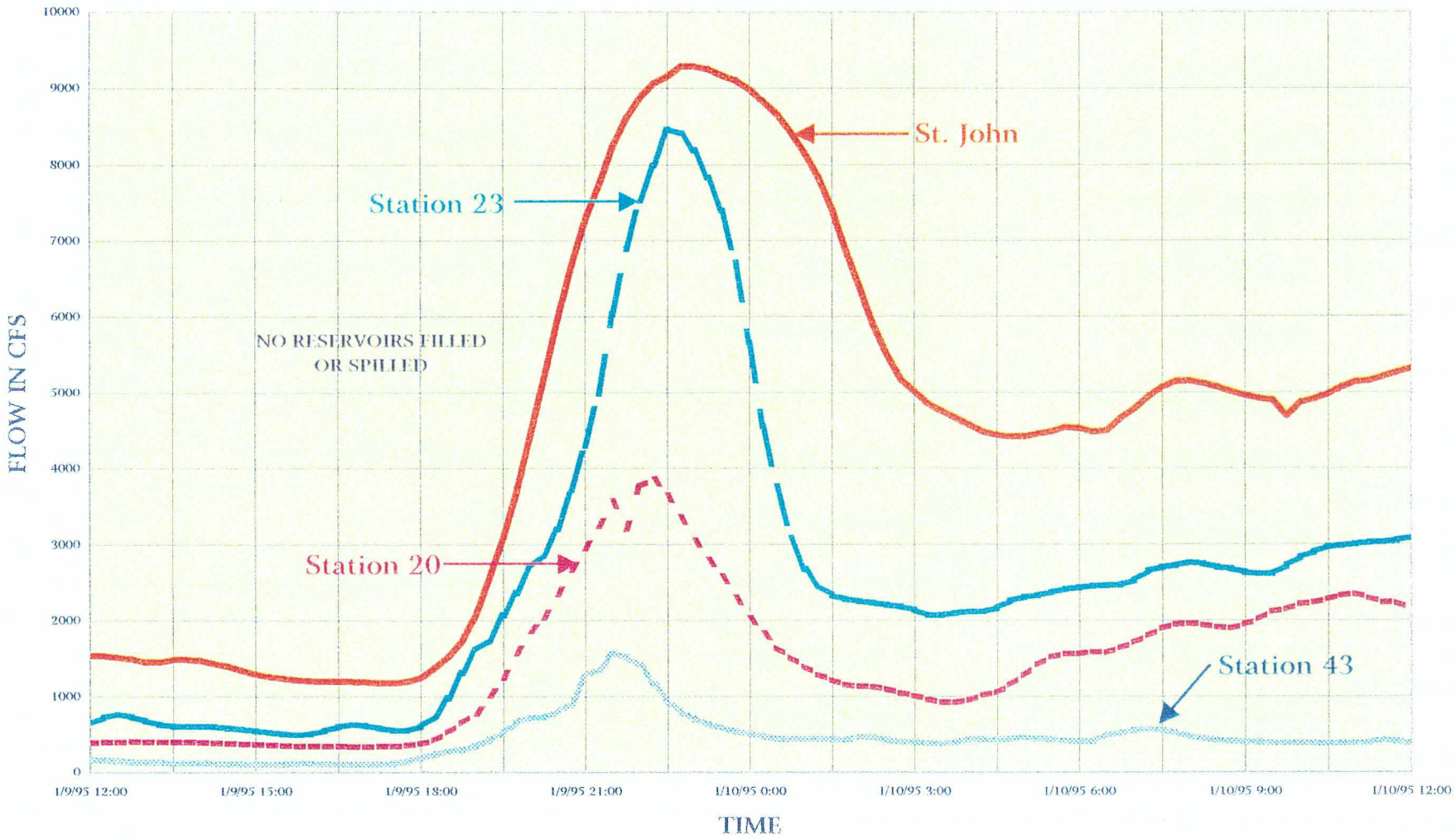


FIGURE 9

GUADALUPE RIVER
MARCH 1995

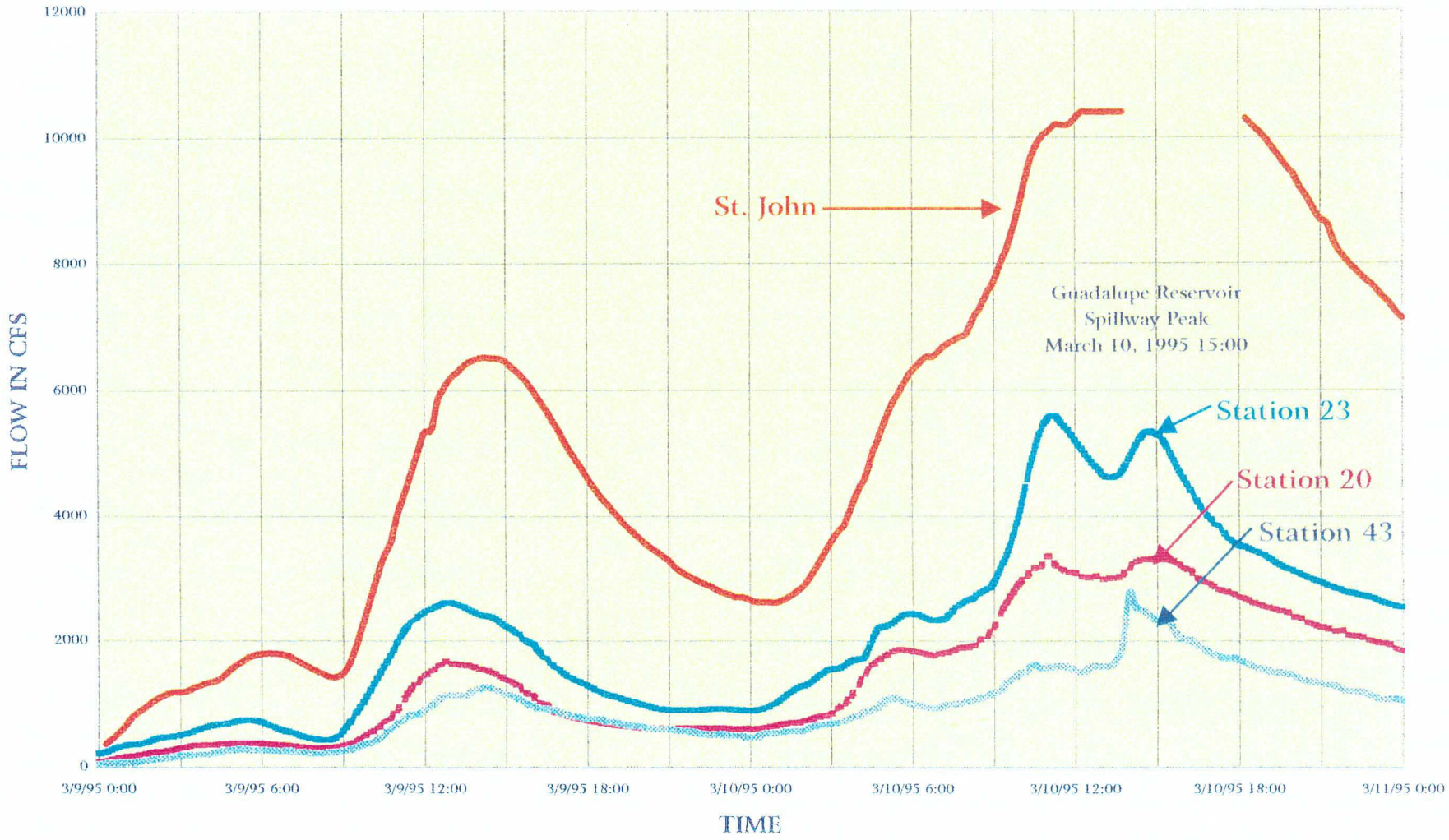
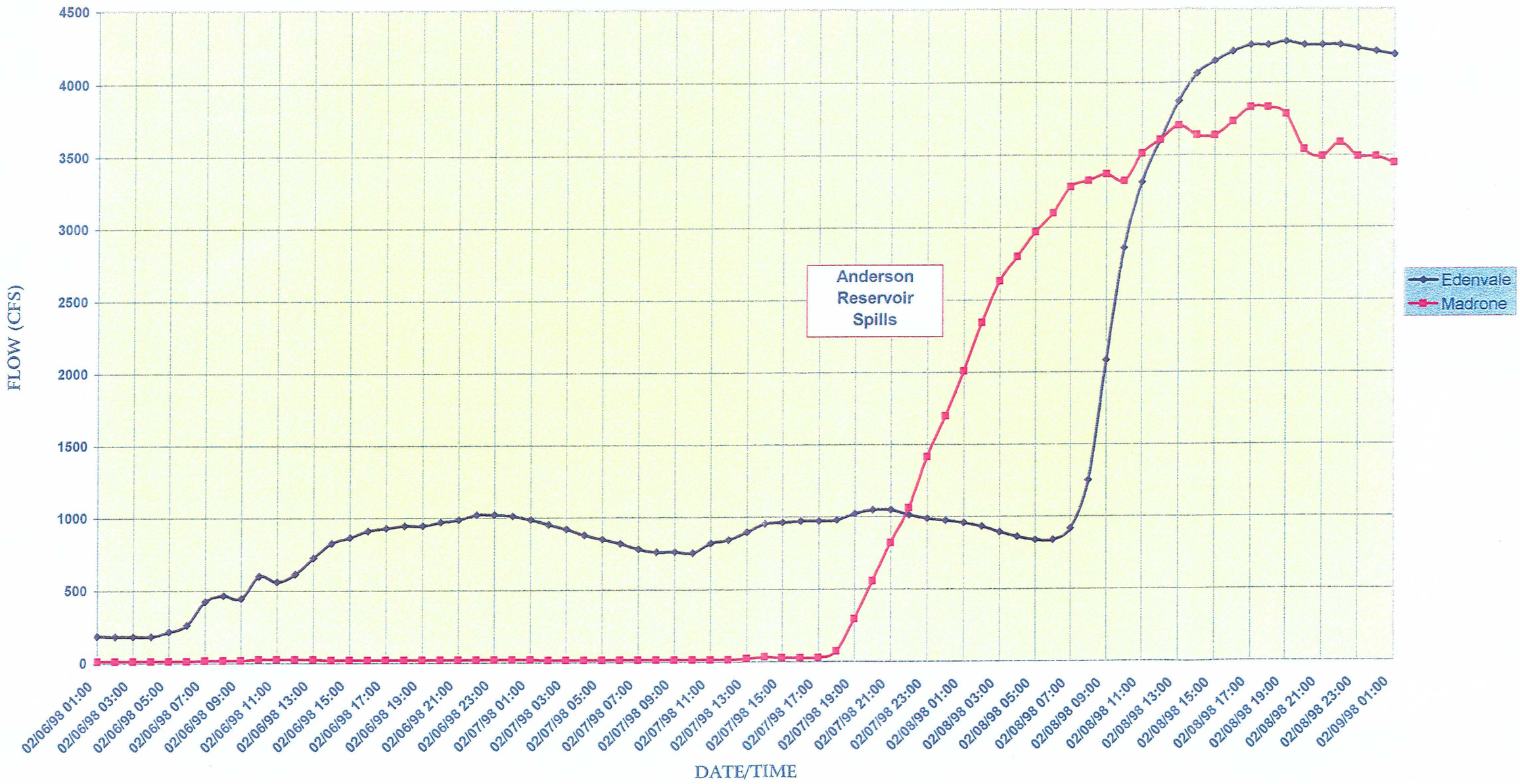


FIGURE 10

COYOTE CREEK FLOWS



G:\excel\coyote_cfs.xls

TABLE 4
Guadalupe River Flood Travel Times
(Based on January and March 1995 Events)

	Arrival of Reservoir Spill Hydrographs	Time to Peak	Total Time Reservoir Spill to Peak at Site*	Average Velocity
Guadalupe Creek Stream Gage No. 43	0:00±	1:00±	1:00±	
				5 feet/second±
Guadalupe River Stream Gage No. 2D at Alamitos Drop Structure	0:00±	2:00±	2:00±	
				4-7 feet/second ±
Guadalupe River Stream Gage No. 23B at Old Hillsdale	0:00±	2:00±	2:00-2:30±	
				6 feet/second ±
Guadalupe River at St. John Street	0:00±	2:30±	3:00±	

*The time from the first indication that a rising hydrograph is approaching to the approximate time the peak flow arrives. This will vary with magnitude of flow.

TABLE 5
Coyote Creek Flood Travel Times
(Based on February 1998 Event)

	Arrival of Anderson Spill Hydrographs	Time to Peak for Q = 4,000 cfs*	Total Time Anderson Spill to Peak at Site*	Average Velocity
Madrone	0:00	13:00	13:00	
				2 feet/second
Edenvale	11:00±	8:00	19:00±	
Capitol Expressway	12:00±	6:00	19:00±	
				1 foot/second
Tully Road	15:00±	4:00	19:00±	
				4-5 feet/second
William Street	17:00±	3:00	20:00±	
				3-4 feet/second
Berryessa Avenue	18:00±	3:00	21:00±	

*The time from the first indication that a rising hydrograph is approaching to the approximate time the peak flow arrives. This will vary with magnitude of flow.

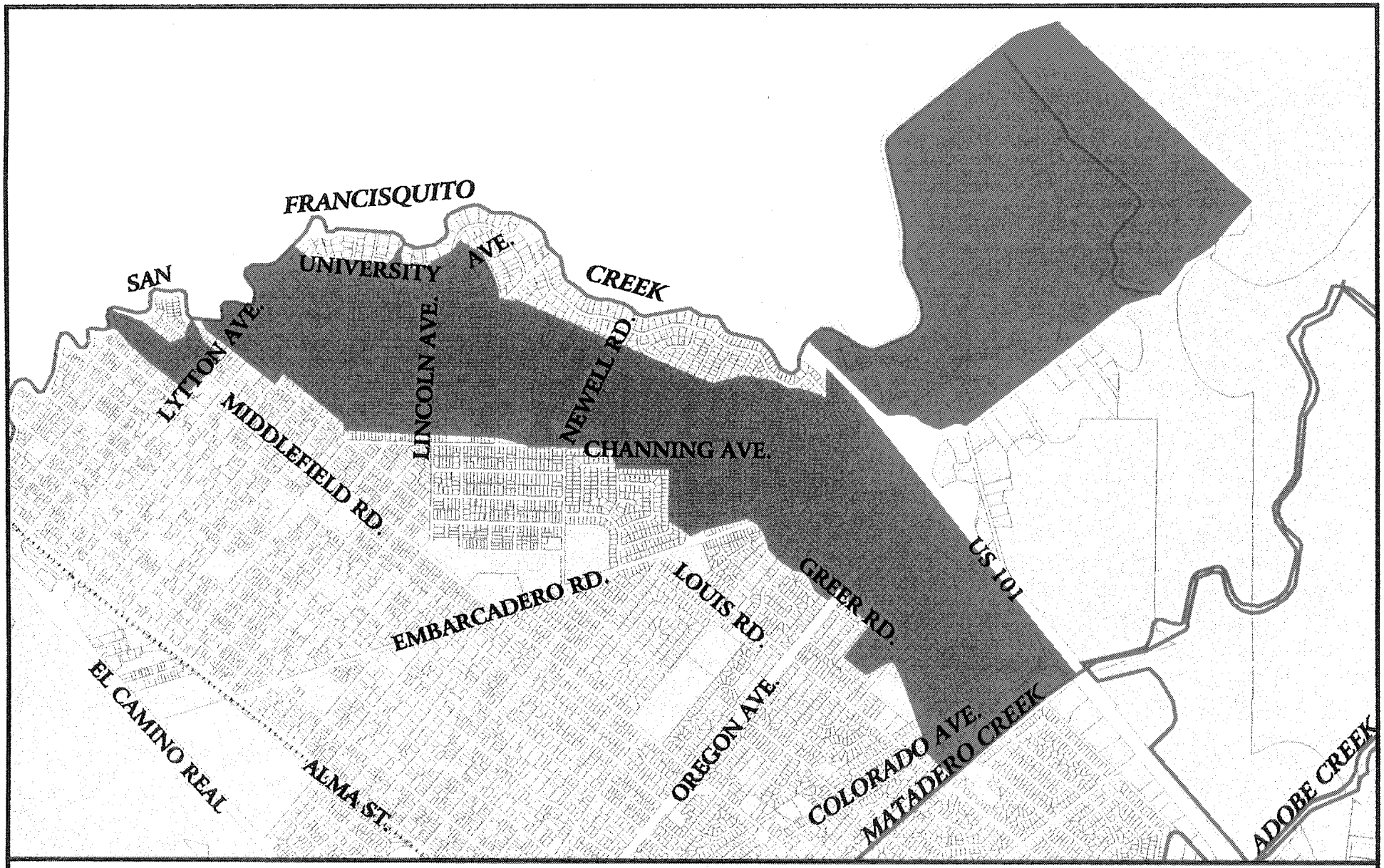
DAMAGE ASSESSMENT AND POSTFLOOD SUMMARY

Damage estimates for Santa Clara County during the February 1, 1998, to February 8, 1998, storm period are $20,000,000. Damage estimates are attached in Appendix C. These were early estimates. Actual damages are expected to be higher.

The District conducted several postflood public meetings to solicit input on the extent and impact of the flooding. The meetings were in Palo Alto, Cupertino, Milpitas, and Sunnyvale, where the most significant flooding was experienced. The compilation of questions asked at these meetings and the responses are contained in Appendix D.

APPENDIX A
Maps and Photographs

1998 FLOOD MAPS



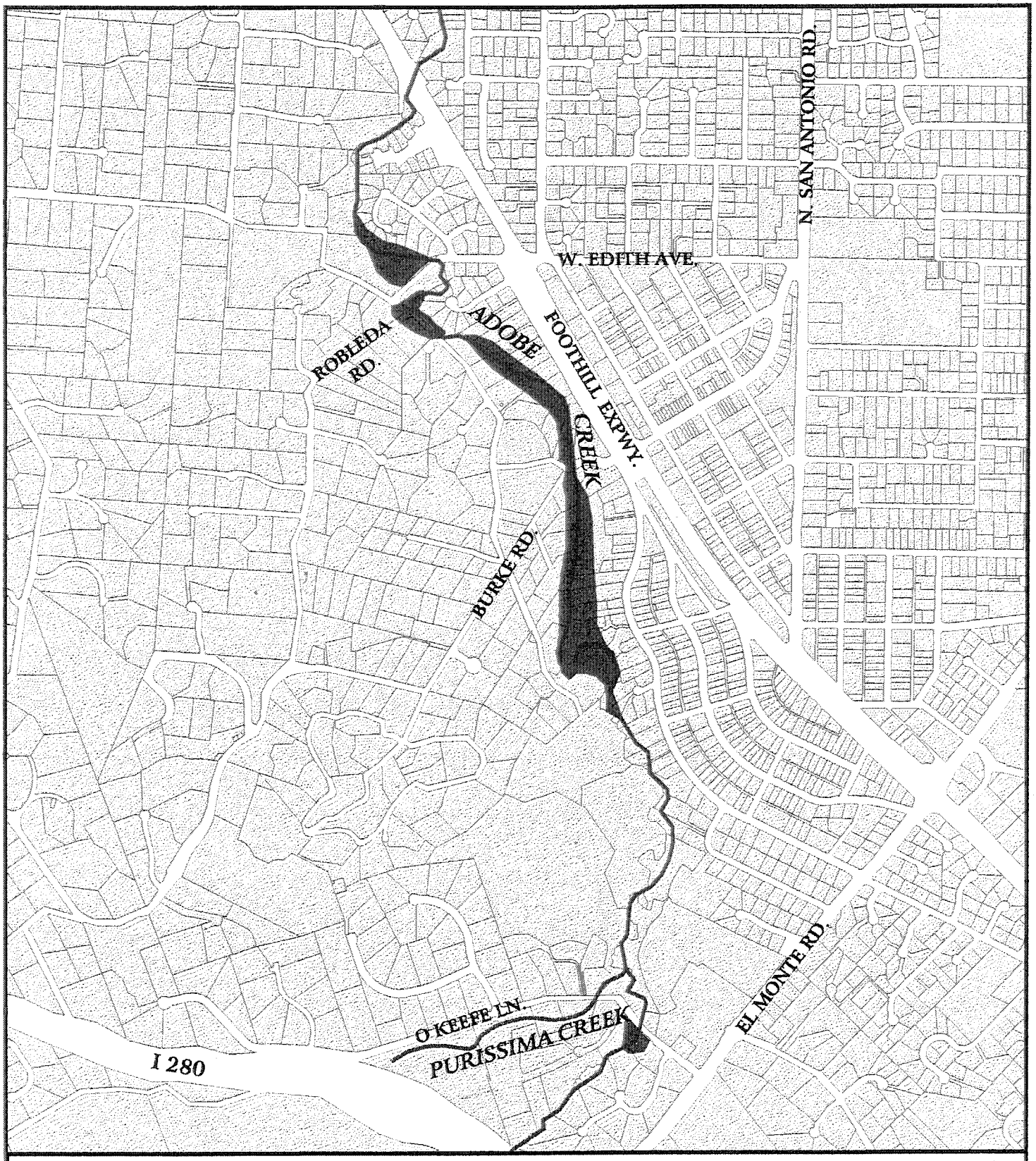
SAN FRANCISQUITO CREEK FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 2000 Feet

N



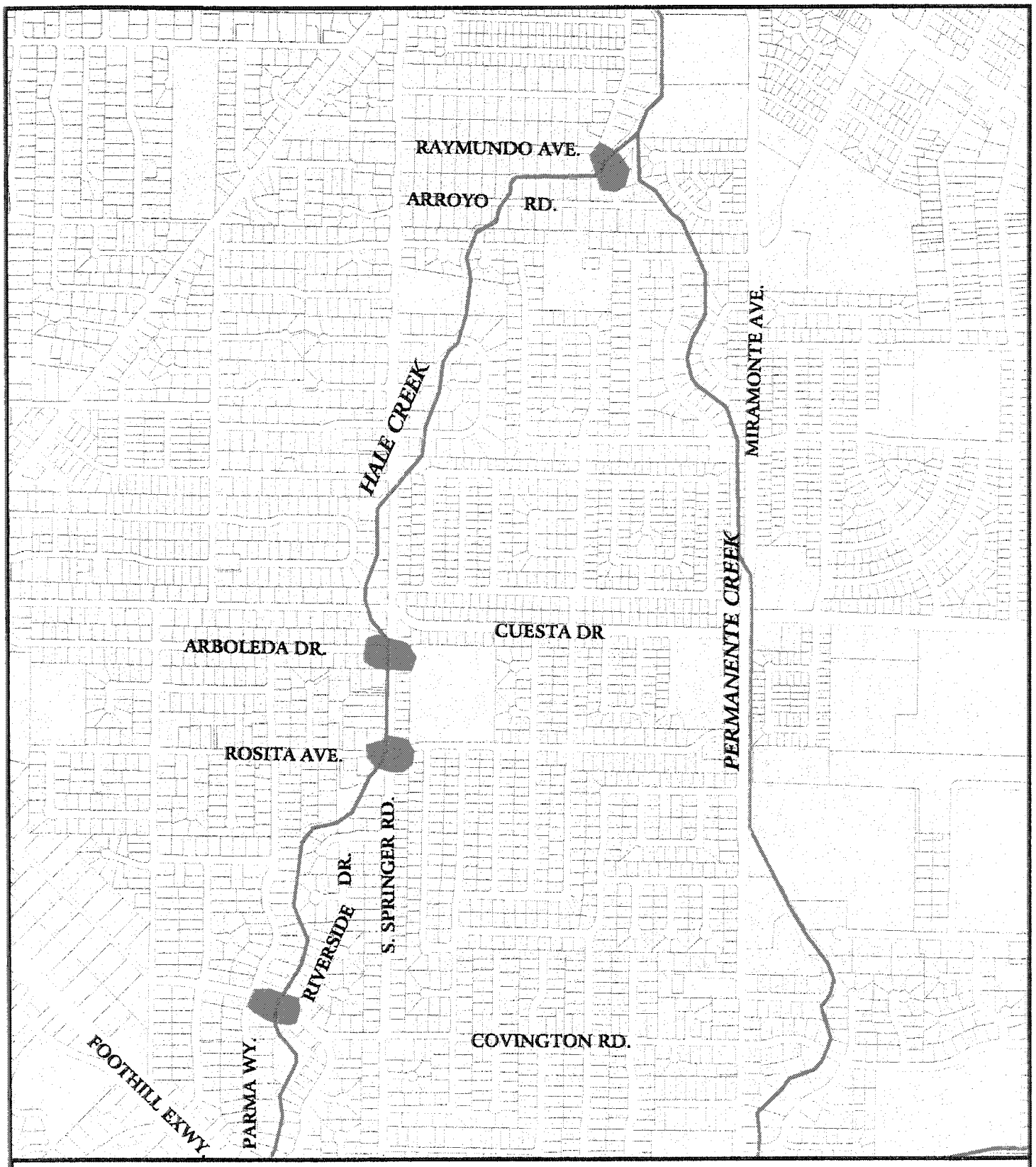
FLOODED AREA

ADOBE CREEK FLOODING
FEBRUARY 1998

SCALE

1000 0 1000 Feet

N



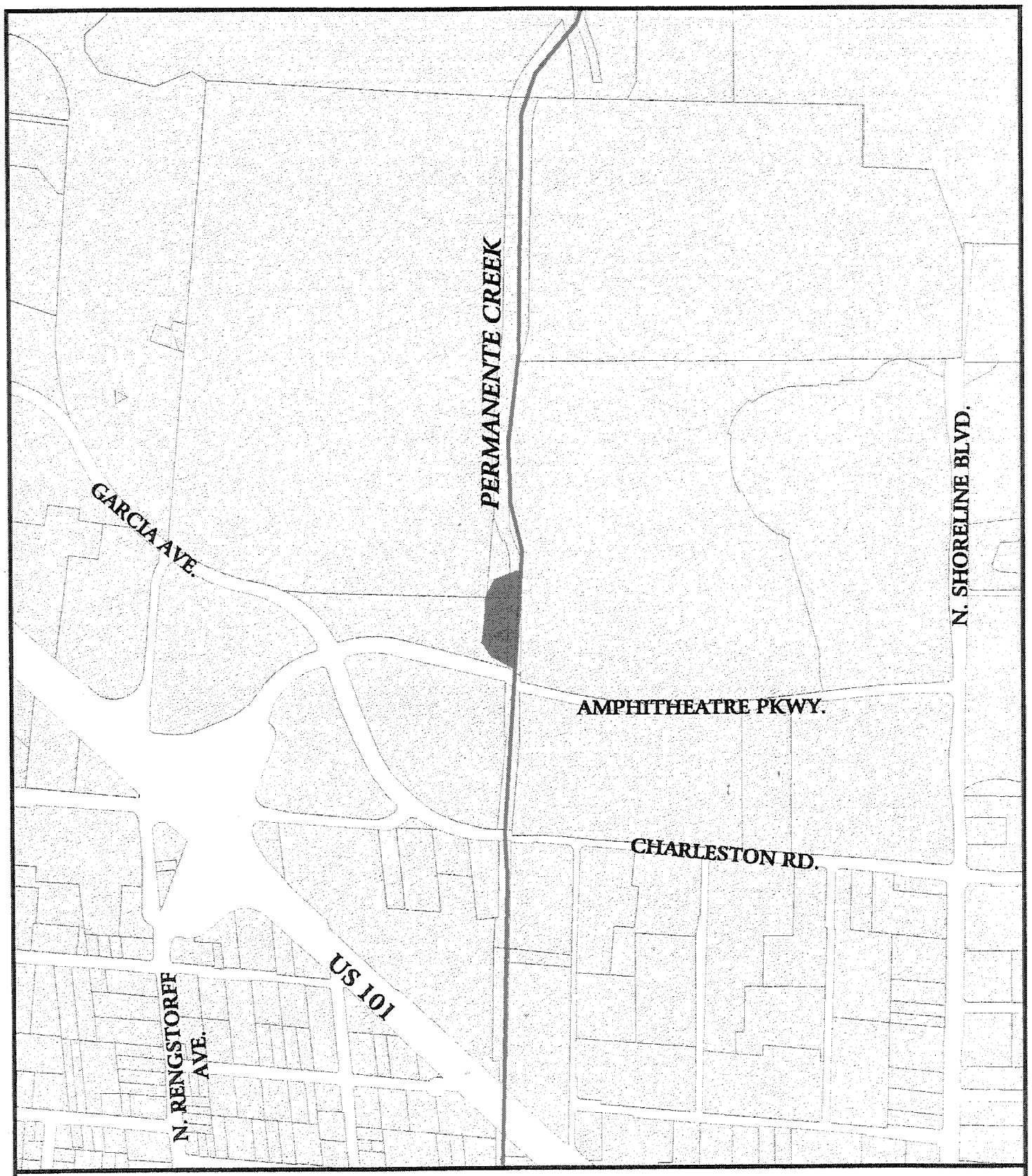
HALE CREEK FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 Feet

N



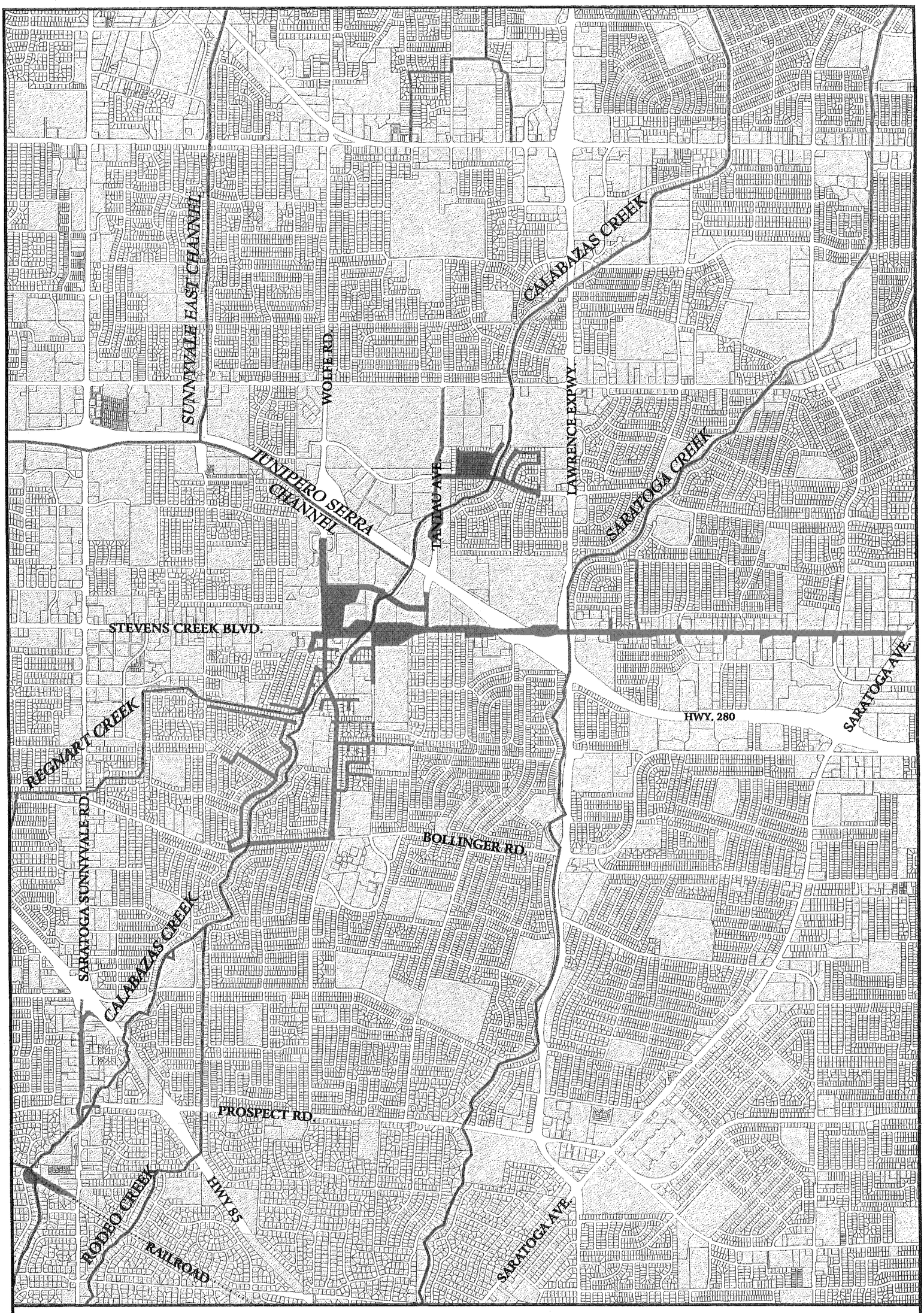
PERMANENTE CREEK
FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 Feet

N

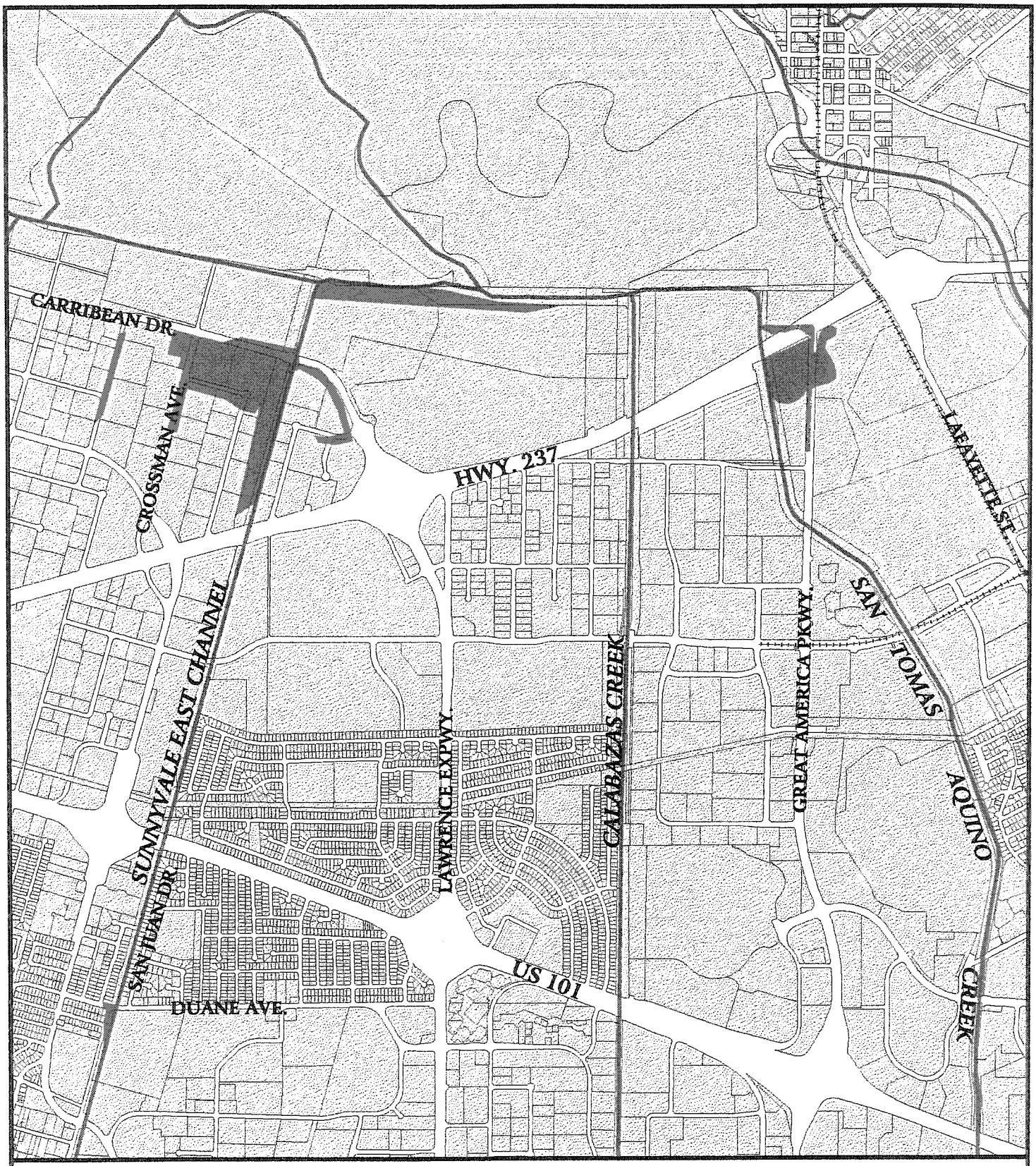


CALABAZAS CREEK FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE
1000 0 1000 2000 Feet

N



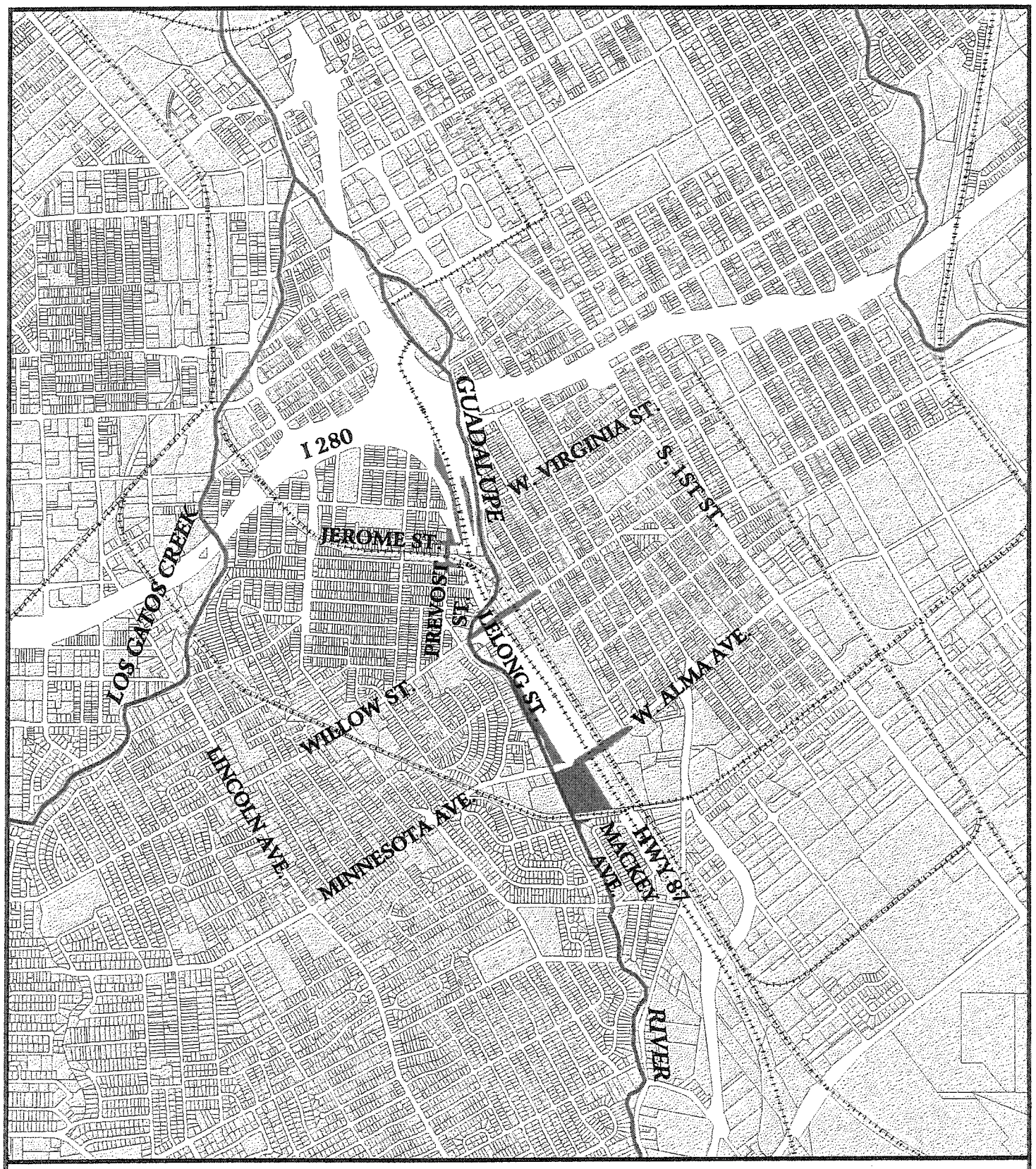
SUNNYVALE EAST CHANNEL AND SAN TOMAS AQUINO CREEK FLOODING FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 2000 Feet

N



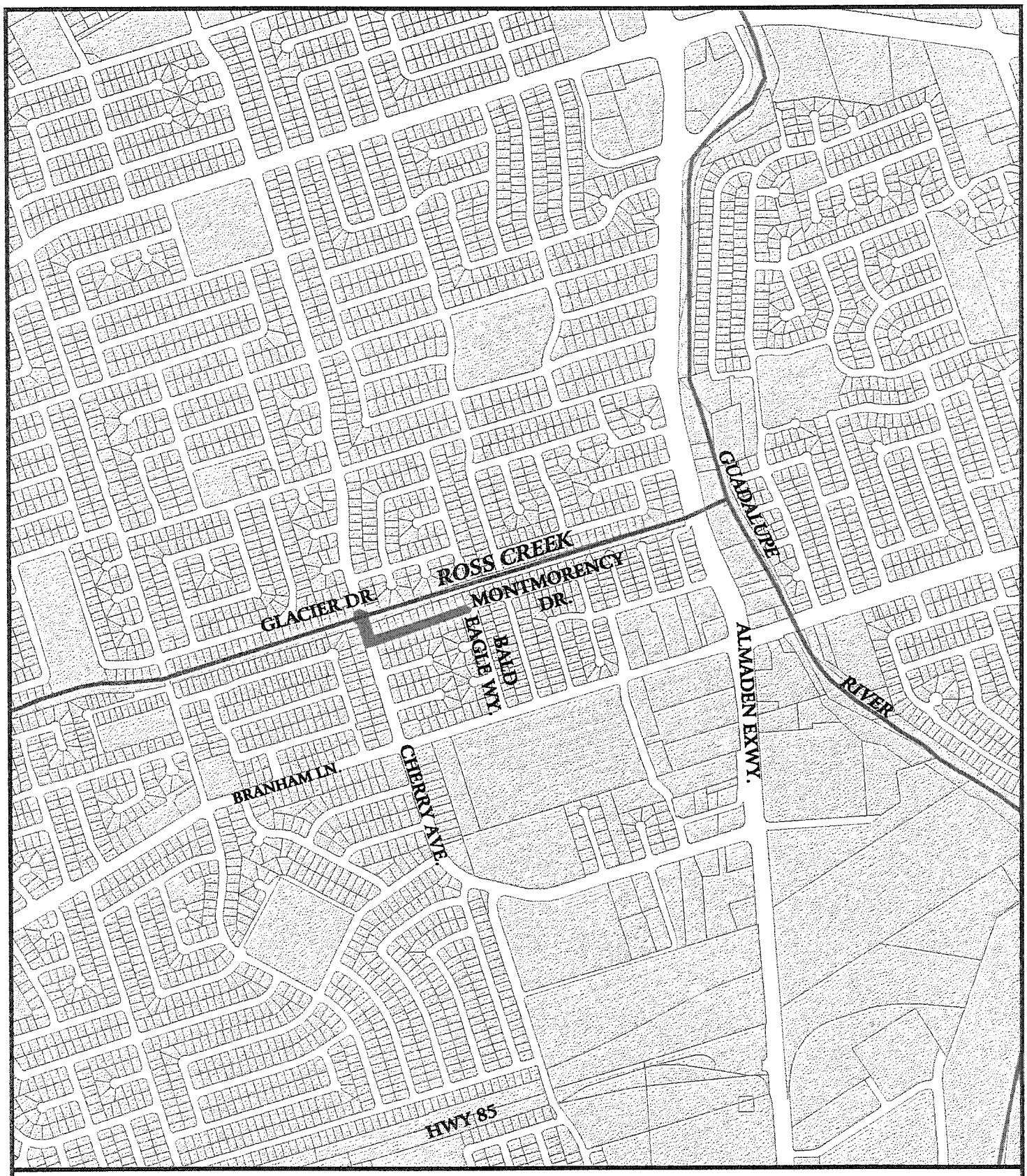
GUADALUPE RIVER FLOODING FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 2000 Feet

N

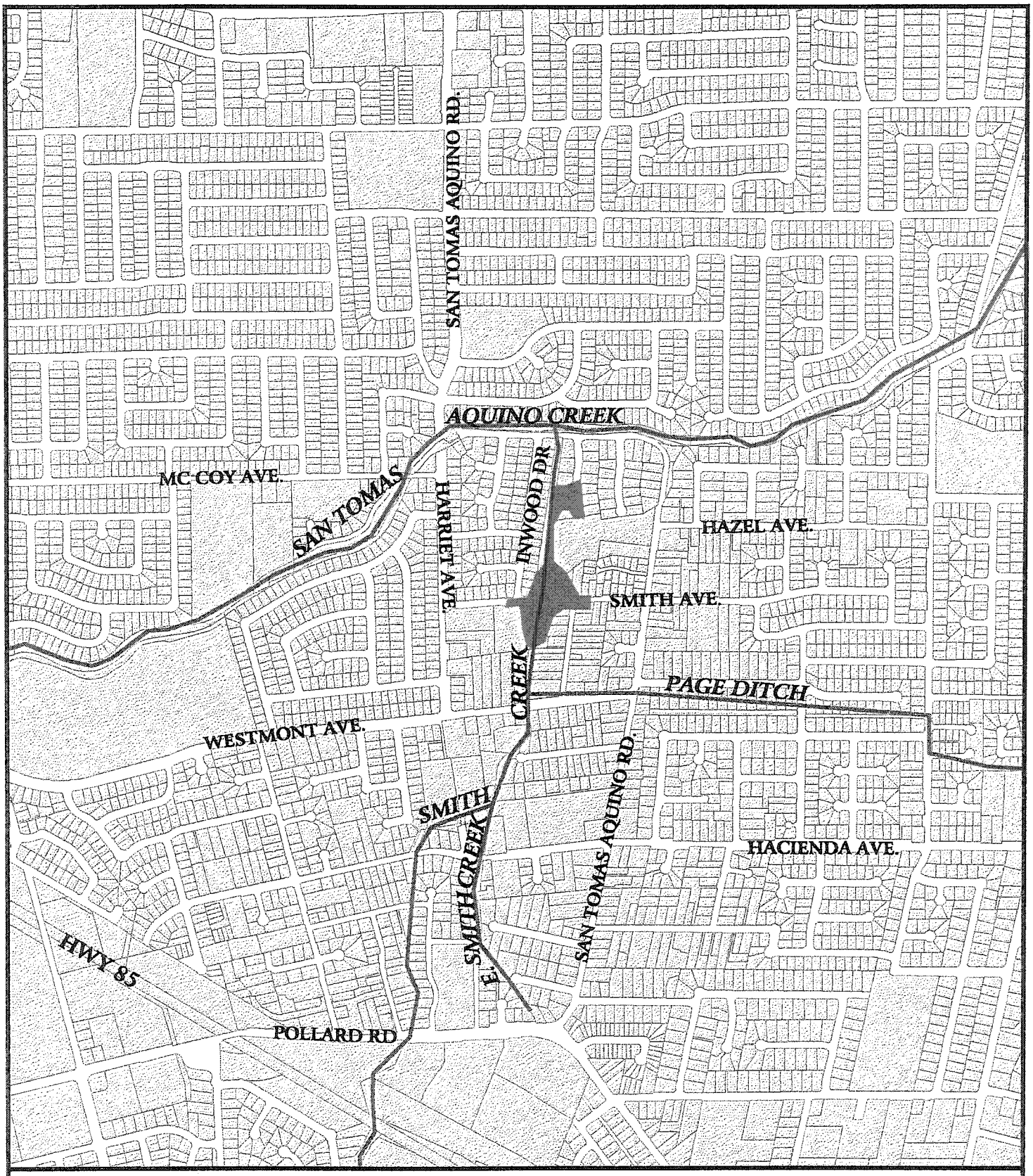


ROSS CREEK FLOODING
FEBRUARY 1998

FLOODED AREA

1000 0 1000 Feet

N



SMITH CREEK FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 Feet

N

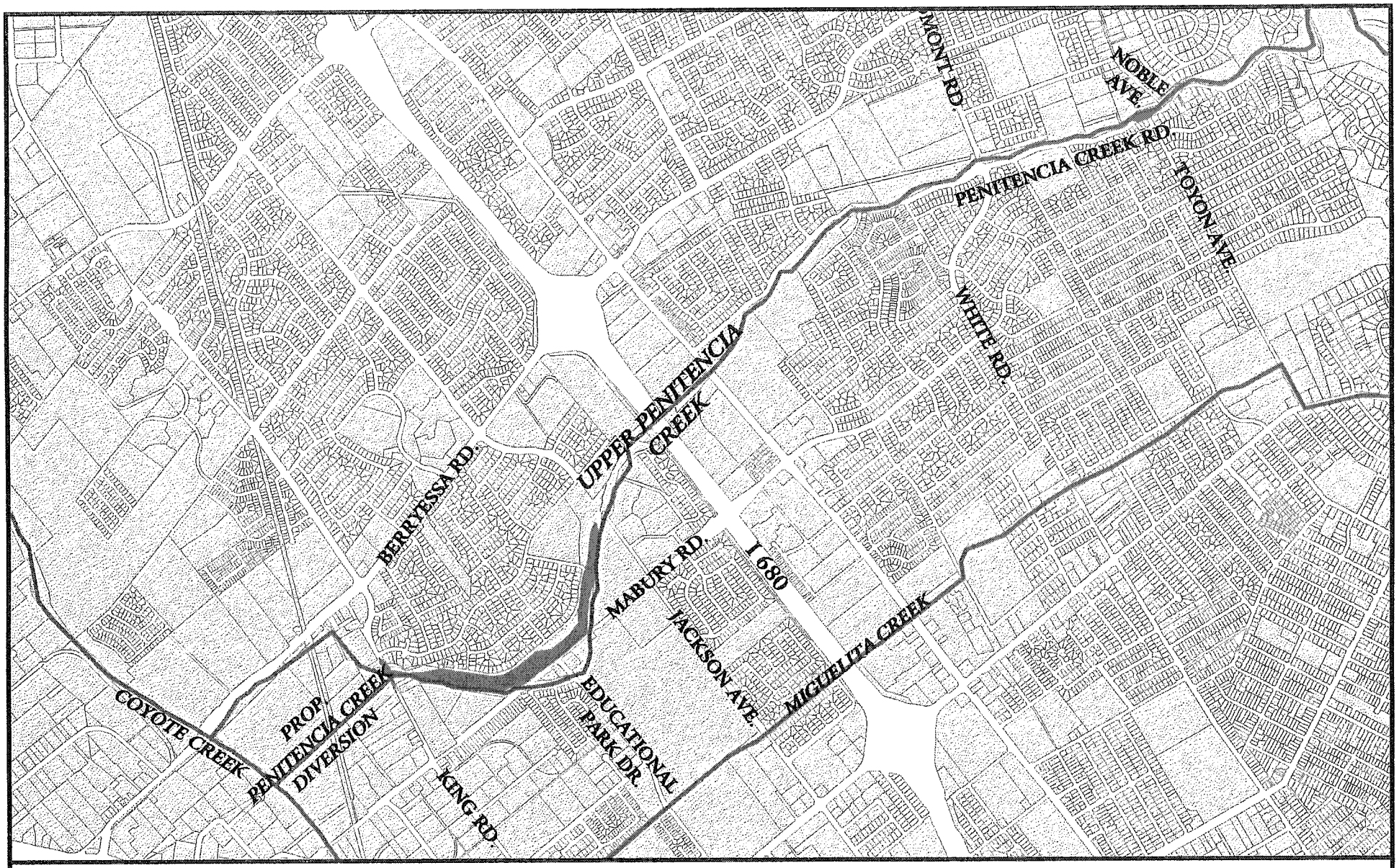
FLOODED AREA

SCALE

1000 0 1000 Feet

N

COYOTE CREEK FLOODING
FEBRUARY 1998

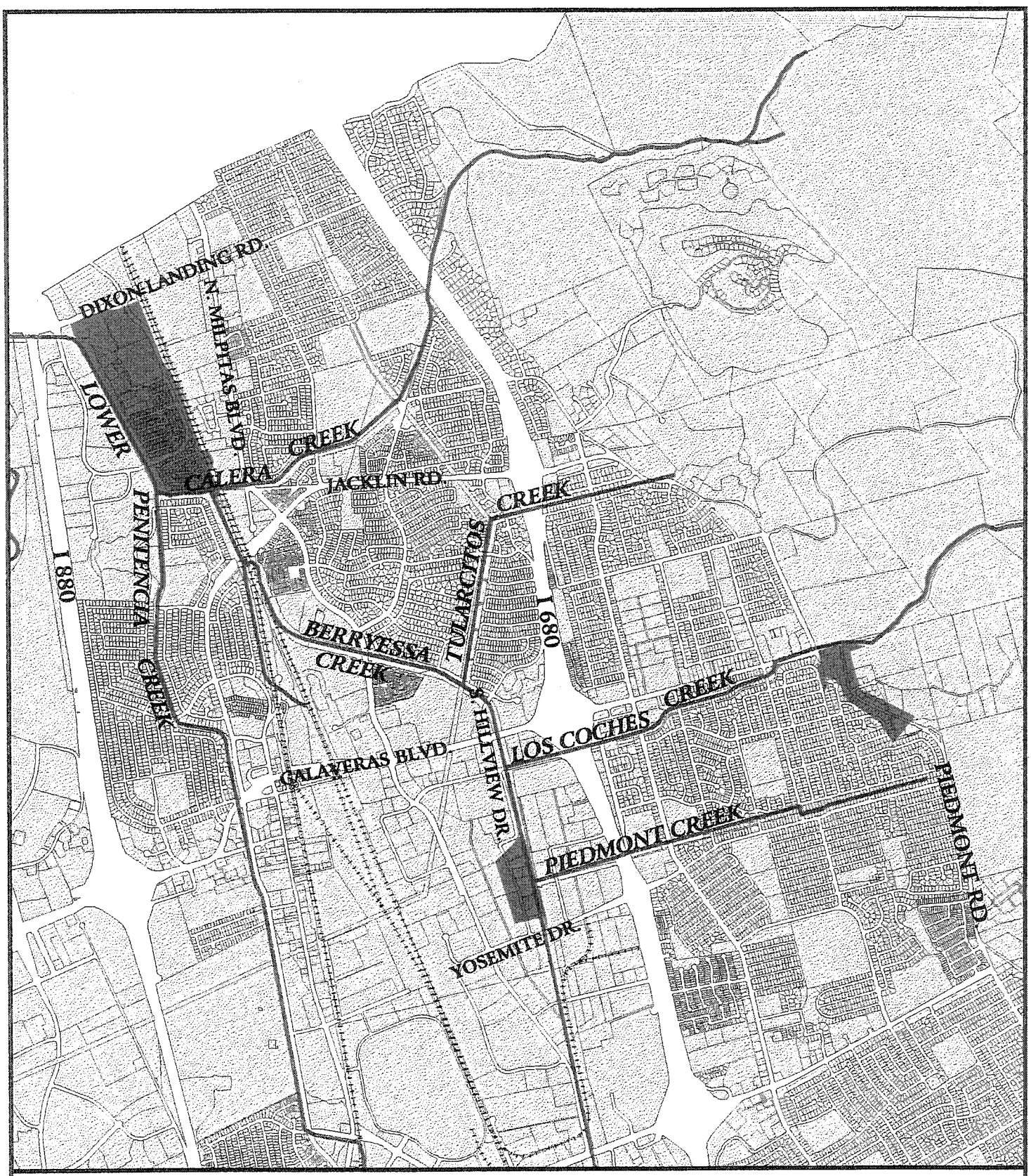


UPPER PENITENCIA CREEK
FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE
1000 0 1000 2000 Feet

N



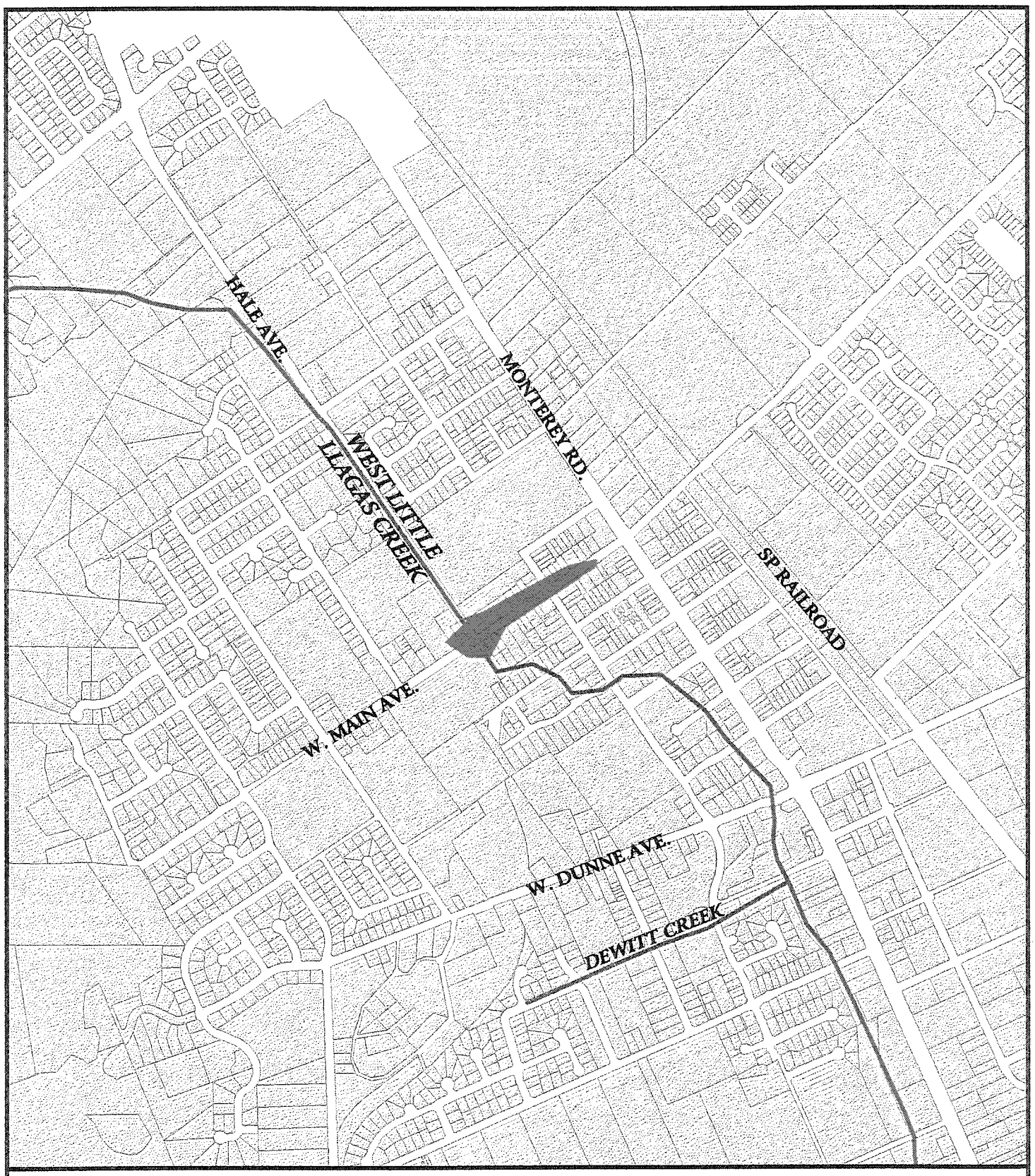
BERRYESSA, CALERA, AND LOS COCHES CREEKS FLOODING FEBRUARY 1998

FLOODED AREA

SCALE

2500 0 2500 Feet

N



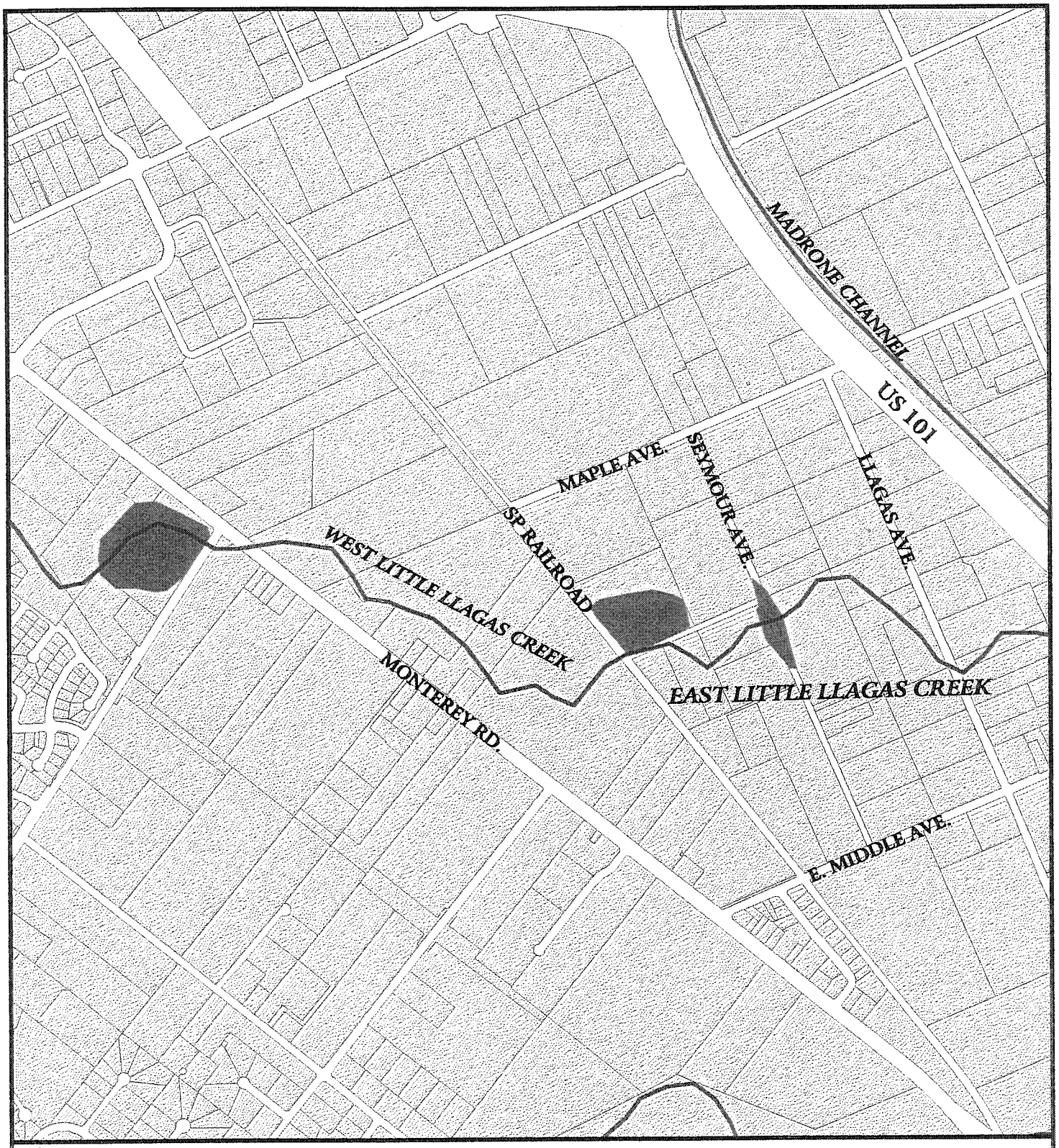
WEST LITTLE LLAGAS CREEK
FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 Feet

N

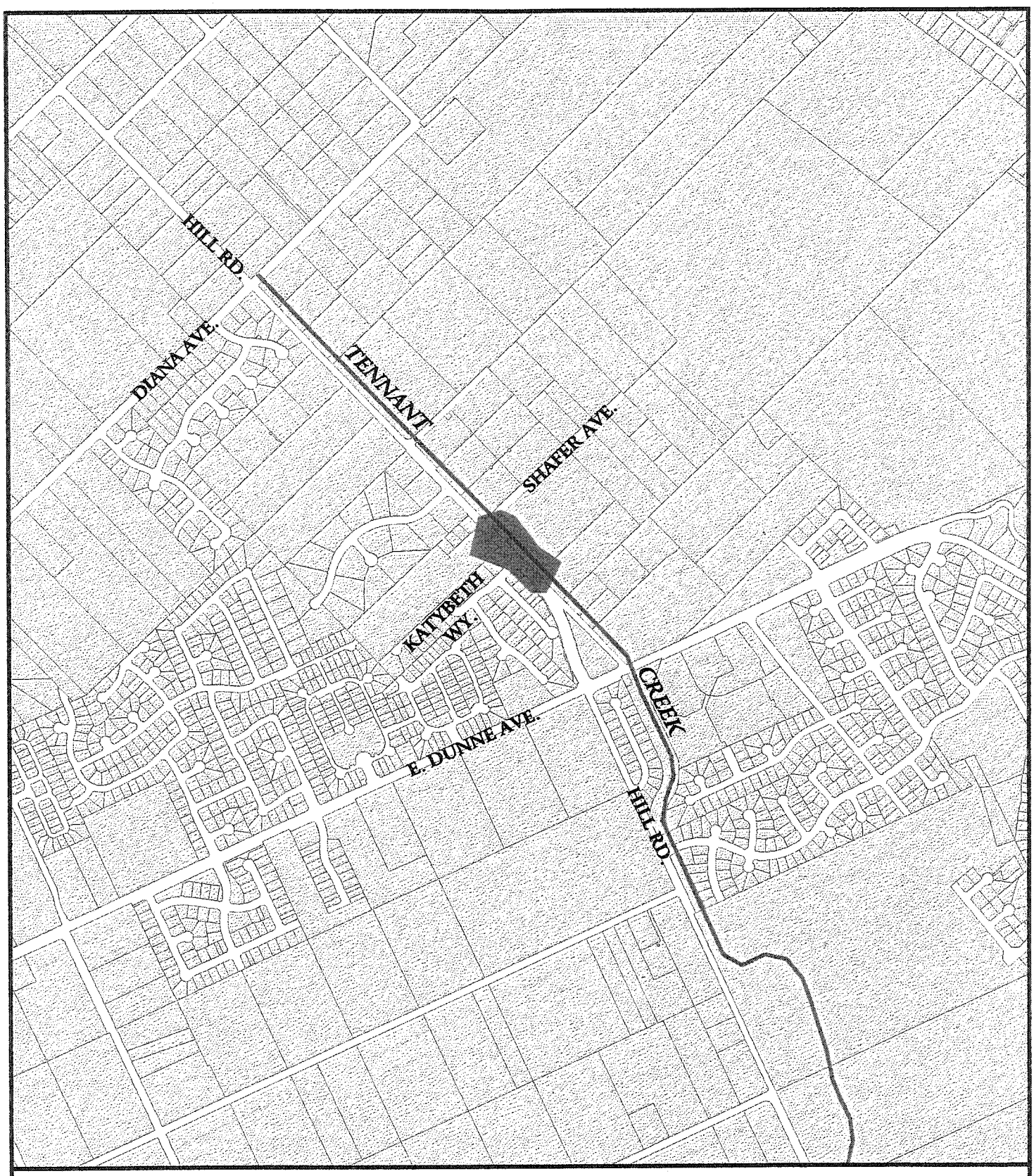


WEST LITTLE LLAGAS CREEK
AND
EAST LITTLE LLAGAS CREEK
FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE
1000 0 1000 Feet

N

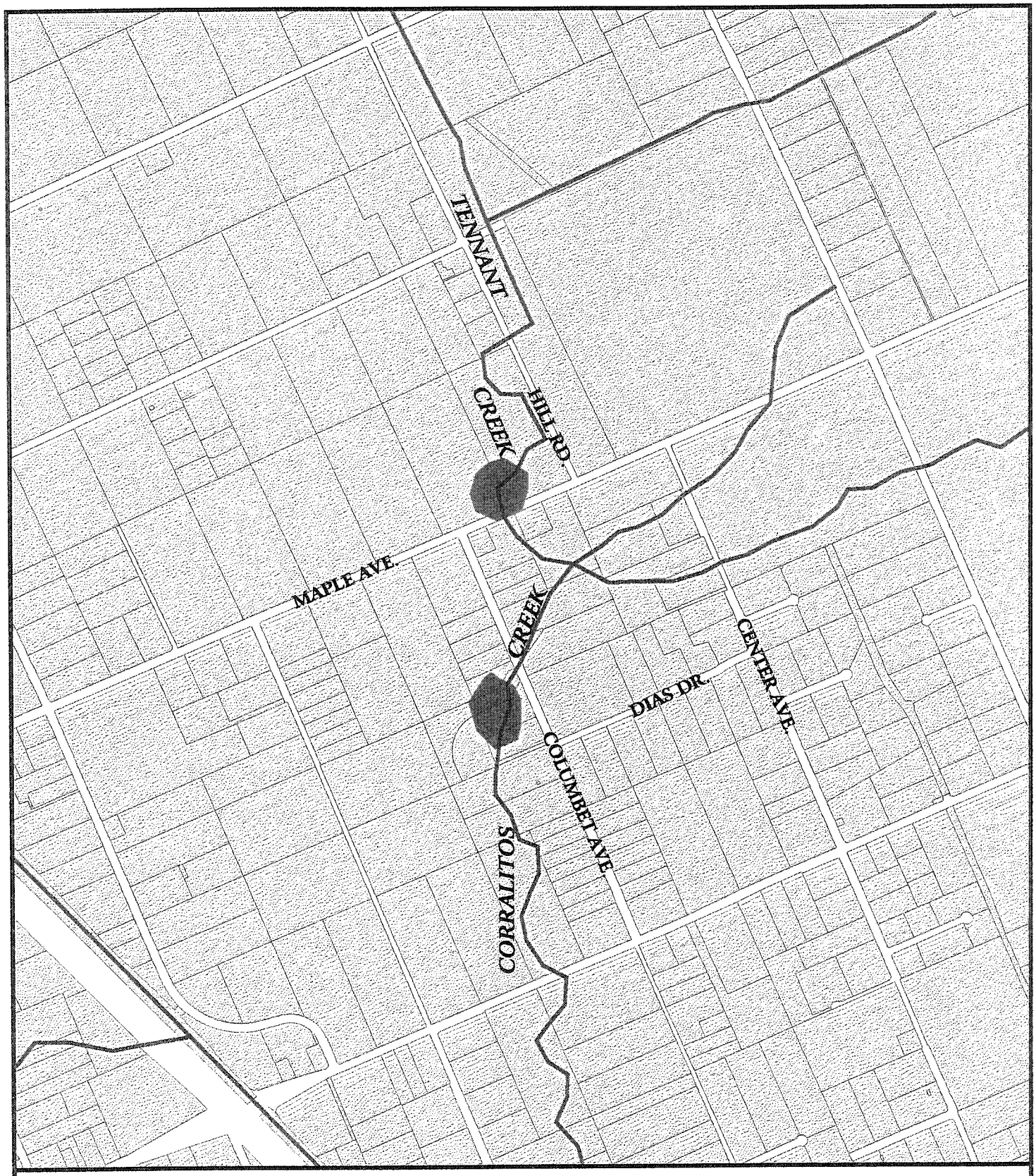


TENNANT CREEK
FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE
1000 0 1000 Feet

N



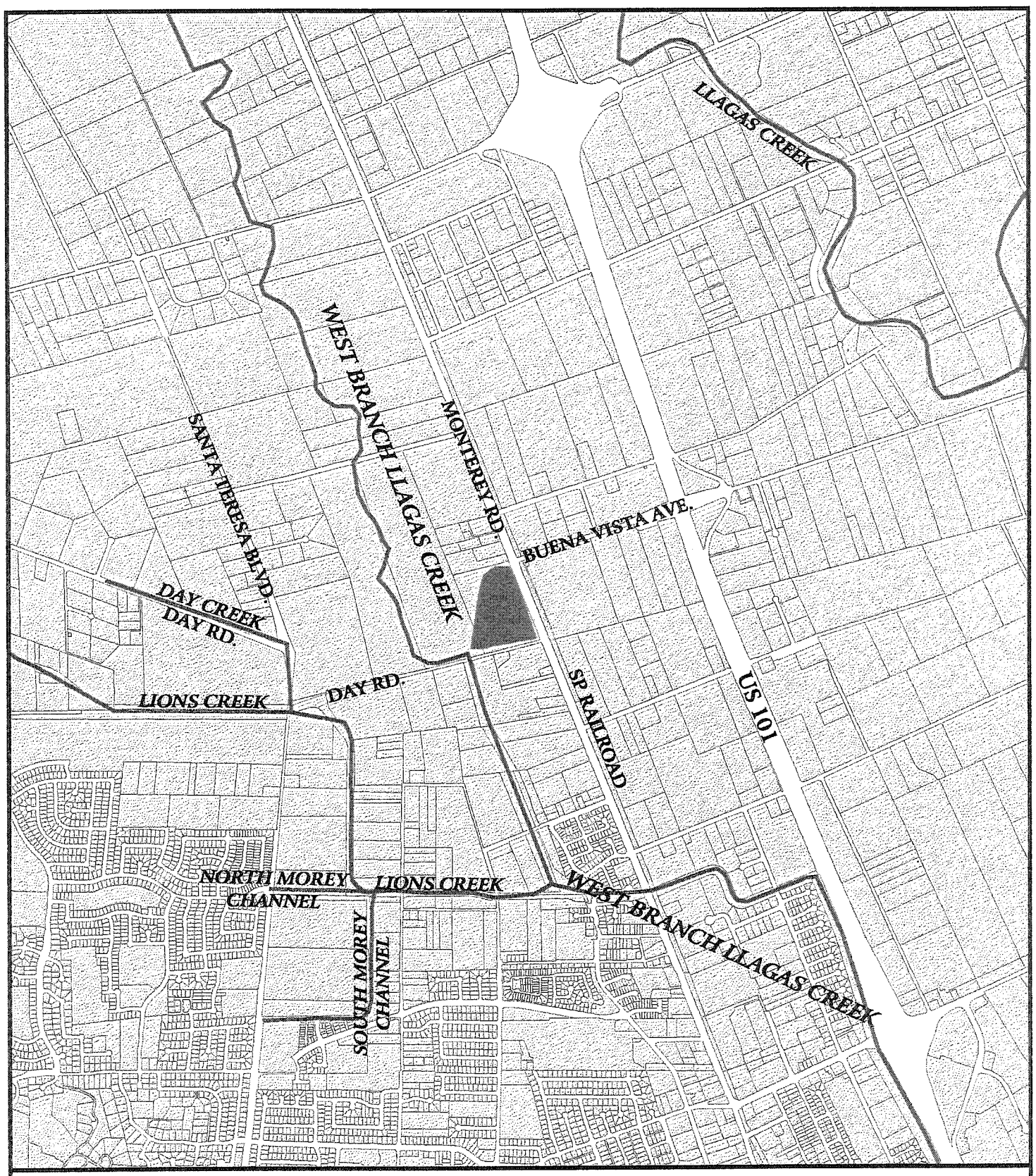
TENNANT CREEK AND CORRALITOS CREEK FLOODING FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 Feet

N



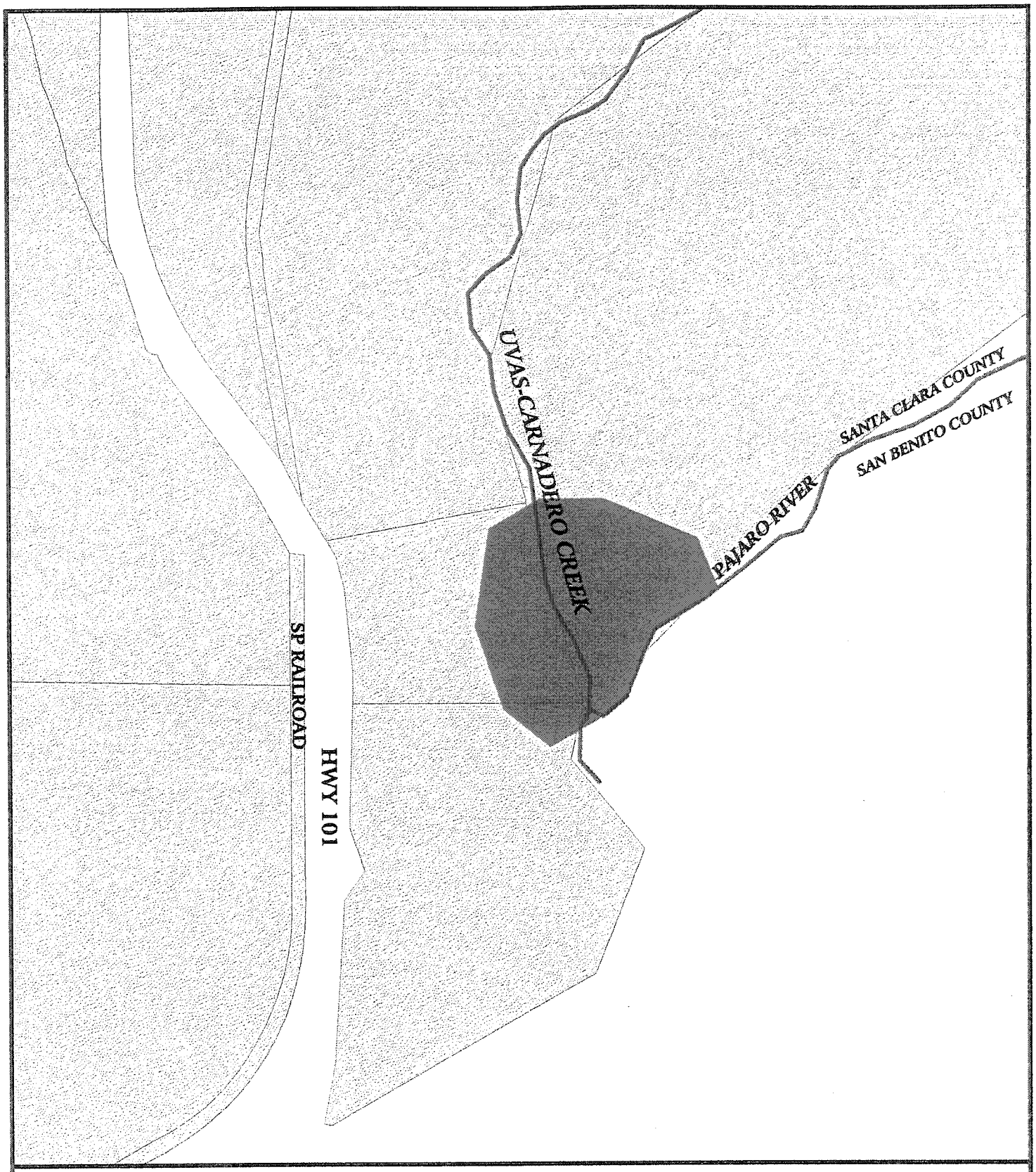
WEST BRANCH LLAGAS CREEK FLOODING FEBRUARY 1998

FLOODED AREA

SCALE

1000 0 1000 2000 Feet

N

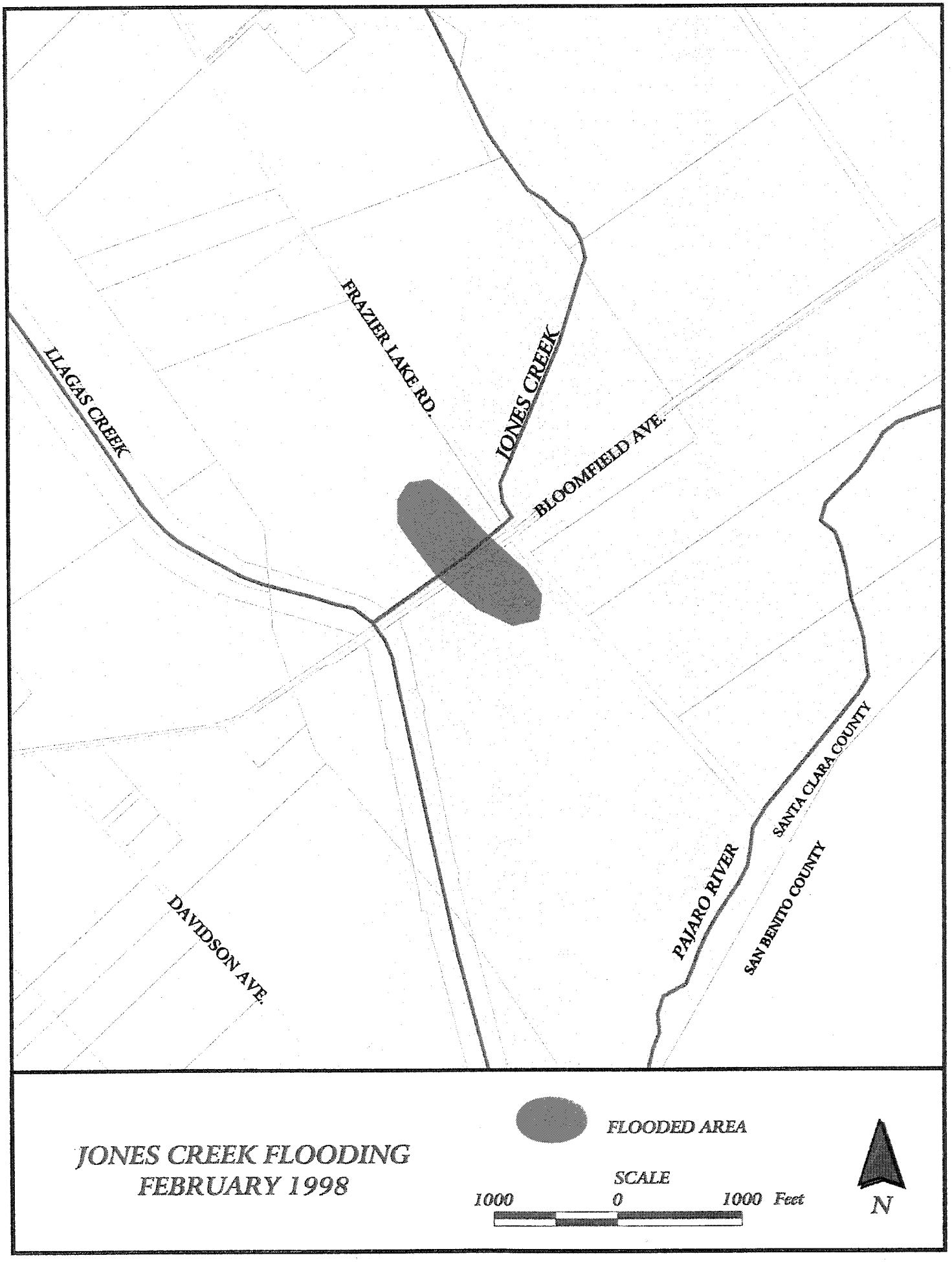


UVAS CREEK FLOODING
FEBRUARY 1998

FLOODED AREA

SCALE
1000 0 1000 Feet

N



JONES CREEK FLOODING
FEBRUARY 1998

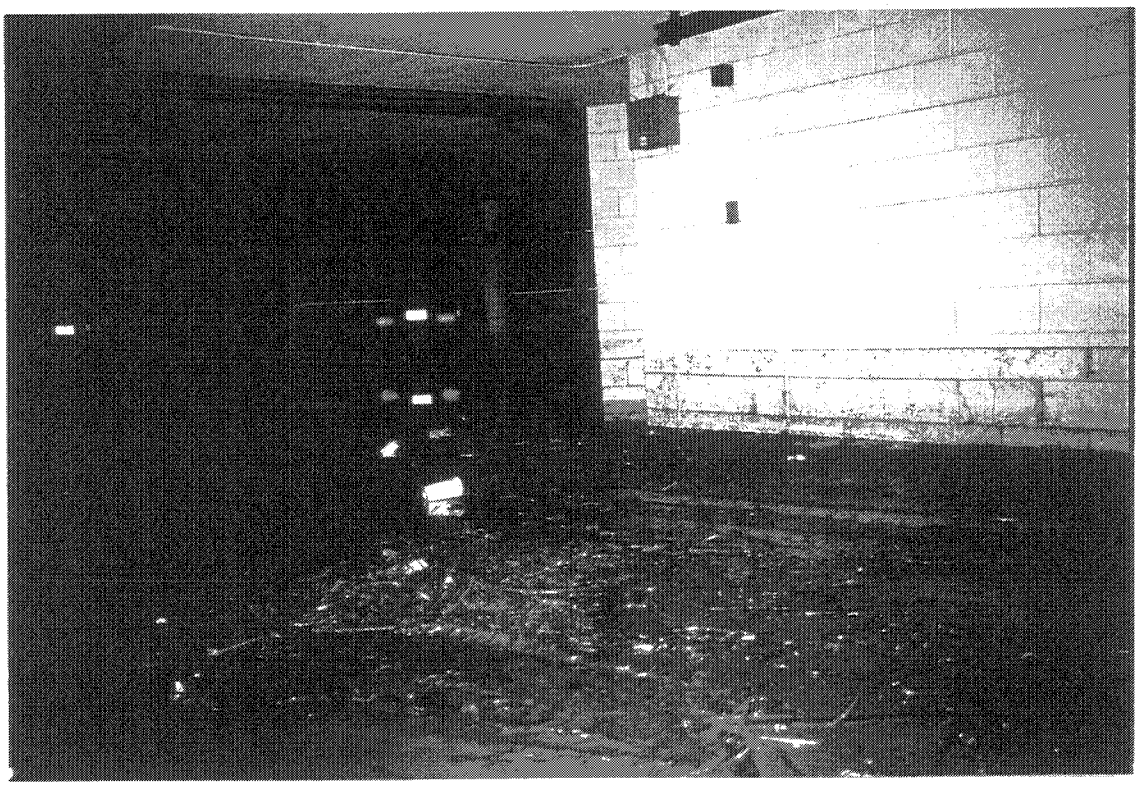
1998 FLOODING PHOTOGRAPHS

Flooding from San Francisquito Creek near Embarcadero Road in Palo Alto
Photographer - Len Vaughn Lahman, San Jose Mercury News
2-3-98

Mud deposited by San Francisquito Creek flood waters
(Palo Alto Avenue in Palo Alto)
2-3-98 (S5199-1)

High water mark on fence and mud deposited by San Francisquito Creek flood waters
(Palo Alto Avenue in Palo Alto)
2-3-98 (S5199-2)

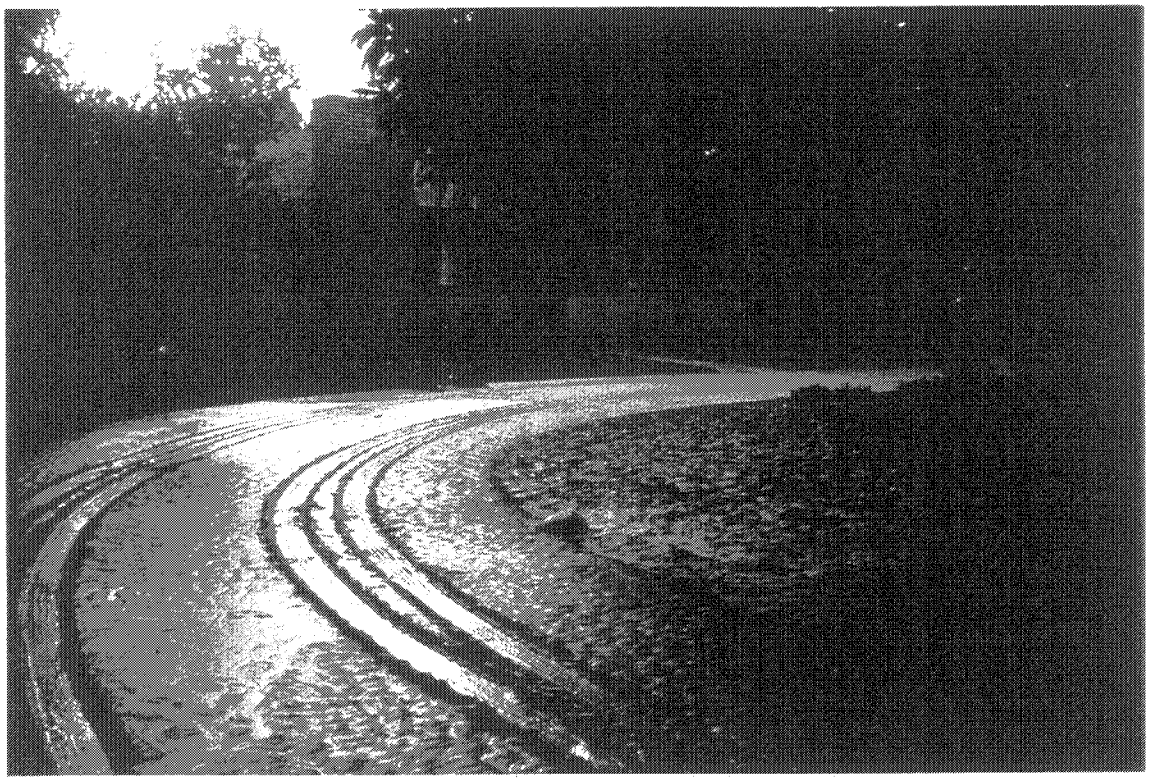
Mud deposited by San Francisquito Creek flood waters
(Palo Alto Avenue in Palo Alto)
2-3-98 (S5199-3)



High water mark and debris in underground garage from San Francisquito Creek flood waters
(Palo Alto)
2-3-98 (S5199-15)

San Francisquito Creek flooding on Ivy Street in Palo Alto
2-3-98 (S5199-27)

San Francisquito Creek flooding on Edgewood Drive in Palo Alto
2-3-98 (S5255-10)



Mud deposited by Adobe Creek flood waters
Near Fremont Road in Los Altos Hills
2-3-98 (S5219-6)

Bridge torn from moorings by Adobe Creek flood waters
Los Altos Redwood Preserve
2-4-98 (S5255-19)

Calabazas Creek at Bollinger Avenue in Cupertino
2-7-98

High water mark from Calabazas Creek flooding on home located on Miller Avenue in Cupertino
2-3-98 (S5255-1)

Mud from Calabzas Creek flooding on street and driveway along Miller Avenue in Cupertino
2-3-98 (S5255-2)

Car moved by Calabazas Creek flood waters
Miller Avenue in Cupertino
2-8-98 (S5212-12)

Mud and debris on Miller Avenue in Cupertino deposited by flood waters from Calabazas Creek
2-8-98 (S5212-5)

Mud deposited on Miller Avenue in Cupertino and adjacent properties
by flood waters from Calabazas Creek
2-8-98 (S5215-23)

Mud deposited in parking garage of Fountainbleu Apartments on Miller Avenue in Cupertino
by flood waters from Calabazas Creek
2-8-98 (S5215-11)

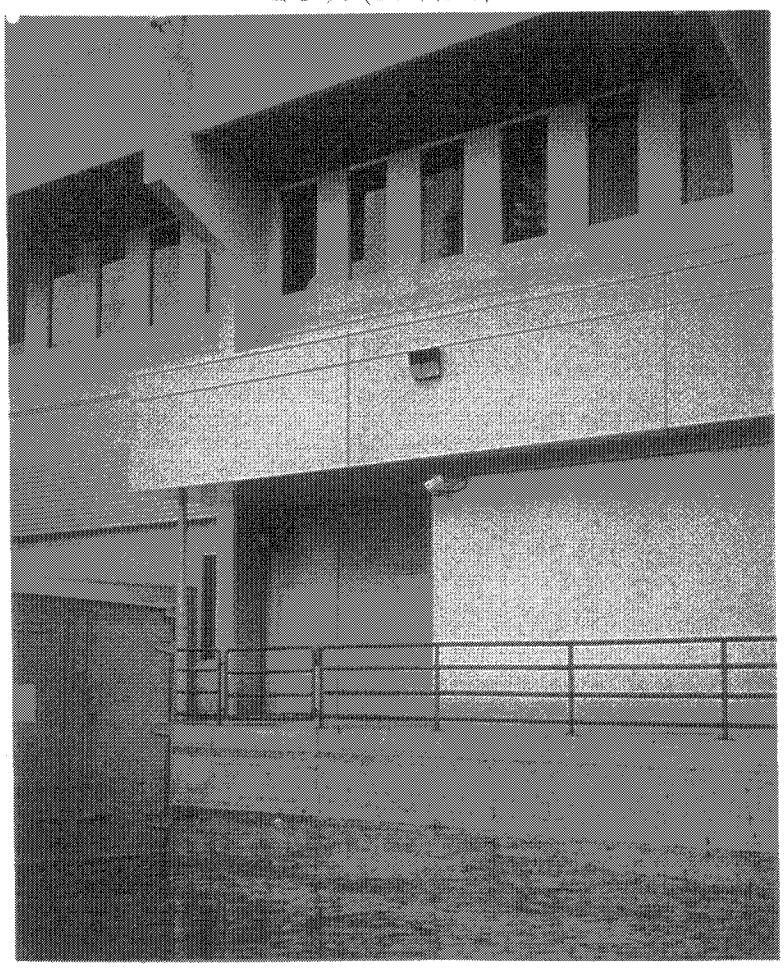
Debris on fence from Calabazas Creek flood waters
Miller Avenue in Cupertino
2-8-98 (S5215-19)

Mud deposited by flood waters from Calabazas Creek in parking lot of business
along Stevens Creek Boulevard in Cupertino

2-3-98 (S5226-2)

Mud deposited by flood waters from Calabazas Creek in parking lot of business along Stevens Creek Boulevard in Cupertino

2-3-98 (S5226-6)



High water mark from Calabazas Creek flood waters on loading dock of Tandem Computers on Tantau Avenue in Cupertino
2-3-98 (S5255-4)

Flooding from Calabazas Creek on Bollinger Avenue in San Jose
2-7-98 (S5184-12)

Flooding from Calabazas Creek on Bollinger Avenue in Cupertino
2-7-98 (S5184-22)

APPENDIX B
Flood Emergency Updates

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water District

Monday, Feb. 9, 1998, 7 a.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Downgraded from Full Activation/Level I Emergency
Time/Day: 11:45 p.m., Sunday, Feb. 8
In response to: Receding stream flows.
Switchboard: (408) 265-2600 is open 24 hours.

Sandbag Program and Sites

District crews continue working around the clock filling sandbags and stocking bags and sand at sandbag locations. With the exception of the Beechnut site at Senter & Phelan, all sandbag sites are being stocked throughout the day and evening. The Beechnut site is not able to accommodate a self-filling operation. Some filled bags will be sent to the site. Residents of the Coyote Creek area are encouraged to use the city of San Jose South Yard site at 4420 Monterey Road, or the water district site at 445 Willow Street.

Residents should be prepared to fill their own sandbags, if necessary. Bring shovels and gloves, wear boots.

Reservoir Status

Reservoir	Capacity	%full
Almaden	1,533 af	spilling
Anderson	89,073 af	spilling
Calero	10,050 af	92%
Chesbro	8,952 af	spilling
Coyote	22,925 af	spilling
Guadalupe	3,723 af	spilling
Lexington	19,834 af	spilling
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	spilling
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2505. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us

Hot Spots and Maintenance Activities

Countywide

Water district staff are on duty in the Emergency Operations Center and in the field to respond to flooding incidents 24 hours a day. **Residents in flood hazard areas are encouraged to take precautions to protect their homes and families.** Maintenance crews are removing silt and fallen trees from creeks to increase creek capacity.

Lower Peninsula Watersheds

No reported problems this morning.

West Valley Watersheds

No reported problems this morning.

Guadalupe Watershed

Lexington Reservoir in Los Gatos is still spilling. Los Gatos Creek and the Guadalupe River continue to recede.

Coyote Watershed

Anderson Reservoir continues to spill at this hour. The flow forecasts for Coyote Creek have been reduced from earlier predictions due to lower amounts of rainfall than expected in the watershed. The flow at the Edenvale station has apparently peaked and has been steadily receding. **Please note that the flow information for Coyote Creek is a prediction based on current weather forscasts, which may change.** Several homes built within the creek banks on 17th Street near Williams have experienced some flooding.

Uvas-Llagas Watershed

No reported problems.

Important Information

The National Weather Service forecast for today is for no rain. The next storm is expected to hit the Bay area Tuesday morning.

County Parks has closed public access to Anderson Lake Park until at least Monday. Cochrane Road east of Highway 101 is closed.

The 1-888-HEY-NOAH information currently refers caller to the district's emergency operations center.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water District

Monday, Feb. 9, 1998, 11:25 a.m

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Downgraded from Full Activation
Time/Day: 11:45p.m., Sunday, Feb. 8
In response to: Receding stream flows.
Switchboard: (408) 265-2600 is open 24 hours.

Sandbag Program and Sites

Since 6 a.m. Friday, Feb. 6, the water district has distributed 240,000 sandbags. Sites replenished Sunday, Feb. 8, include San Jose sites at Williams Street, Needles/Rock Springs, Santa Clara Street, 21st Street, San Jose Main and South yards, Willow Street, Almaden Expressway, Winfield; and in south county the San Martin Yard.

Residents should be prepared to fill their own sandbags, if necessary. Bring shovels and gloves, wear boots.

Reservoir Status

Reservoir	Capacity	%full
Almaden	1,533 af	spilling
Anderson	89,073 af	spilling
Calero	10,050 af	93.4%
Chesbro	8,952 af	spilling
Coyote	22,925 af	spilling
Guadalupe	3,723 af	spilling
Lexington	19,834 af	spilling
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	99.9%
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	104.3%

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2505. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Hot Spots and Maintenance Activities

Countywide

Water district staff are on duty in the Emergency Operations Center and in the field to respond to flooding incidents 24 hours a day. Residents in flood-hazard areas are encouraged to take precautions to protect their homes and families. Maintenance crews are removing silt and fallen trees from creeks to increase creek capacity.

Lower Peninsula Watersheds

No reported problems this morning.

West Valley Watersheds

No reported problems this morning.

Guadalupe Watershed

Lexington Reservoir in Los Gatos is still spilling, Los Gatos Creek and the Guadalupe River continue to recede.

Coyote Watershed

Anderson Reservoir continues to spill at this hour. The flow forecasts for Coyote Creek have been reduced from earlier predictions due to lower amounts of rainfall than expected in the watershed. The flow at the Edenvale station has apparently peaked and has been steadily receding. **Please note that the flow information for Coyote Creek is a prediction based on current weather forecasts, which may change.** Several homes built within the creek banks on 17th Street near Williams have experienced some flooding.

Uvas-Llagas Watershed

No reported problems.

Important Information

Because no rain is forecast for Monday, Feb. 9, the water district began releases Monday morning from Stevens Creek, Lexington, Guadalupe, Almaden, Calero, and Vasona reservoirs. Releases are expected to be made from Chesbro and Uvas after concurrence with Monterey County later on Monday, Feb. 9.

County Parks has opened public access to Anderson Lake Park for vehicle traffic ONLY.

The 1-888-HEY-NOAH information line currently refers callers to the district's emergency operations center.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water District

Monday, Feb. 9, 1998, 6 p.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Status quo
Time/Day: 11:45 p.m., Sunday, Feb. 8
In response to: Receding stream flows.
Switchboard: (408) 265-2600 is open 24 hours.

Monday, Feb. 9, President Clinton responded to Gov. Wilson's request for 27 counties in California, including Santa Clara County, to be declared disaster areas.

Sandbag Program and Sites

The water district's sandbag program is getting a boost from volunteers. The California Conservation Corps, a state-funded agency providing job skills to young adults is providing 50 skilled workers to build levees. The San Jose Conservation Corps, a privately funded agency assisting youth in getting their high school diploma and job training, is providing 80 high school youth to fill sandbags at the water district's warehouse. The Elmwood Correctional Facility, a county correction agency, is providing 50 adults to assist in filling sandbags at district sites throughout the county.

Hot Spots and Maintenance Activities

Countywide

Monday, Feb. 9 was a day of sunshine and no rainfall. County creeks continue to recede. Rain is predicted again on Tuesday, Feb.10. County residents are encouraged to continue to prepare for flooding as the week progresses.

Lower Peninsula Watersheds

No reported problems this morning.

West Valley Watersheds

No reported problems this morning.

Guadalupe Watershed

Lexington Reservoir in Los Gatos is still spilling, Los Gatos Creek and the Guadalupe River continue to recede.

Coyote Watershed

Coyote and Anderson reservoirs continue to spill, however, flows in Coyote Creek are receding.

Uvas-Llagas Watershed

No reported problems.

Reservoir Status

Reservoir	Capacity	Current
Almaden	1,533 af	spilling
Anderson	89,073 af	spilling
Calero	10,050 af	9,402 af
Chesbro	8,952 af	spilling
Coyote	22,925 af	spilling
Guadalupe	3,723 af	3,526 af
Lexington	19,834 af	spilling
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	3,417 af
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2505. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Important Information

The 1-888-HEY-NOAH information line currently refers callers to the district's emergency operations center.

Limited staffing will be maintained through the night at the water district emergency operations center. Telephone operators will be on duty and emergency personnel will be on call.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water Distri

Tuesday, Feb.10, 1998, 1 p.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Maintaining Partial Activation Level
Time/Day: 11:45 p.m., Sunday, Feb. 8
In response to: Receding stream flows and intermittent rainfall.
Switchboard: (408) 265-2600 is open 24 hours.
Monday, Feb. 9, President Clinton declared 27 counties in California, including Santa Clara County, disaster areas.

Sandbag Program and Sites

Monday, Feb. 9 the water district filled 23,000 sandbags; delivered 3,300 filled bags each to the Beechnut site in San Jose, and to the cities of Palo Alto and Mountain View; filled 1,000 sandbags at the El Toro Fire Station in Morgan Hill; and delivered 480 tons of sand to satellite sites throughout the county. By the end of today, Tuesday, Feb. 10, filled sandbags will be at all the district's satellite sites throughout the county.

Reservoir Status

Reservoir	Capacity	%Full
Almaden	1,533 af	spilling
Anderson	89,073 af	spilling
Calero	10,050 af	94%
Chesbro	8,952 af	98%
Coyote	22,925 af	spilling
Guadalupe	3,723 af	95%
Lexington	19,834 af	spilling
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	92%
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2505. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Hot Spots and Maintenance Activities

Lower Peninsula Watersheds

Matadero Creek—Crews are removing sediment north of Greer and south of Highway 101, using a Priestman excavator with a 75-foot reach.

Matadero, Adobe and Barron creeks—At the Palo Alto Flood Basin, crews are removing trash that blocks the flow of water.

San Francisquito Creek—Planners are evaluating an erosion problem north of Sand Hill Road. Quick action to remedy the problem is likely.

Adobe Creek—Planners are evaluating erosion problems near Edith and near O'Keefe.

West Valley Watersheds

Various creeks—Tree removal.

Guadalupe Watershed

The watershed is in good condition today and the crews assigned to this watershed are responding to incoming calls, as well as assisting the other watersheds with their priorities.

Coyote Watershed

Berryessa Creek—Crews are removing sediment below the Piedmont-Cropley culvert. Also, crews are placing a culvert in the sandbag levee at the confluence with Calera Creek.

Thompson Creek—Crews are removing downed trees between Tully and Aborn roads

Upper Penitencia Creek—Crews are removing blockage at a bridge below King Road.

Coyote Creek—Crews are stockpiling materials (gravel and rock) at the Brokaw Yard in case the materials are needed in an upcoming emergency.

Uvas-Llagas Watershed

This watershed is in good shape. The crews assigned to this watershed are assisting the crews in the Coyote Watershed.

Important Information

County creeks are still receding. The water district is releasing water from Stevens Creek, Lexington, Almaden, Calero and Vasona reservoirs to allow storage for continued runoff from the watersheds. The outlet pipe at Guadalupe Reservoir will be closed sometime on Tuesday, Feb. 10, because additional storage capacity has been accomplished through releases that began Monday, Feb. 9. The district is not releasing from Coyote and Anderson reservoirs in order to make certain that Coyote Creek can carry the current flows and any runoff from intermittent rainfall.

WATER SUPPLY—Local reservoirs are not being used at this time as water supply to the district's system because of the sediment from the watershed runoff entering the reservoirs. The water district is supplying its drinking water treatment plants with federal water from San Luis Reservoir.

The district also imports state water through the South Bay Aqueduct. The state system has been shut down since Friday, Feb. 6, and is expected to be back online Friday, Feb. 13. The state Department of Water Resources, operator of this state imported water source, shut down the state project system to repair a pipeline leak.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water District

Wednesday, Feb.11, 1998, 1 p.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency

Up/Downgrade: Maintaining Partial Activation Level

Time/Day: 11:45 p.m., Sunday, Feb. 8

In response to: Receding stream flows and intermittent rainfall.

Switchboard: (408) 265-2600 is open 24 hours.

Monday, Feb. 9, President Clinton declared 27 counties in California, including Santa Clara County, disaster areas.

Sandbag Program and Sites

Sand bags are continually being delivered to the water district's satellite facilities including in Palo Alto, the Palo Alto Airport; in Mountain View, Moffett Field; in San Jose, Willow Street, 10th Street at Phelan, the district's Almaden Expressway site and Winfield warehouse; in Morgan Hill, the El Toro Fire Station; and in San Martin, Santa Clara County South Yard.

Tuesday, Feb. 10, through Wednesday, Feb. 11, more than 30,000 filled sand bags were delivered to the district's satellite locations.

Hot Spots and Maintenance Activities

Lower Peninsula Watersheds

San Francisquito Creek–Planners continue to evaluate erosion problems north of Sand Hill Road.

Hale Creek–Crews are installing bracing on concrete-lined sections of the creek.

Palo Alto Flood Basin–When crews cleaned the trash racks yesterday, they discovered some areas that need repairs. Those repairs will begin either today or tomorrow.

Various Creeks–Crews are removing trees and cleaning trash racks and pier noses.

Adobe Creek–Erosion repair work proceeding on the creek at Fremont Road in Los Altos Hills.

West Valley Watersheds

Various Creeks–Significant number of downed trees being removed and erosion work will be addressed.

Permanent Creek–Planner and engineer are evaluating removal of existing sediment at Grant Road in Los Altos.

Guadalupe Watershed

Coyote-Alamitos Canal–Crews are removing slide material.

Guadalupe River–Planners are visiting the site where our Central Pipeline crosses the Guadalupe River (between Hedding and Taylor) to evaluate erosion around the pipe.

Coyote Watershed

Berryessa Creek–Crews are removing sediment and cleaning culverts at Piedmont-Cropley roads.

Uvas-Llagas Watershed

Chesbro Reservoir–Planners are inspecting the outlet works to evaluate an erosion issue. Some work may be necessary.

Reservoir Status

Reservoir	Capacity	%Full
Almaden	1,533 af	98.9%
Anderson	89,073 af	spilling
Calero	10,050 af	93.5%
Chesbro	8,952 af	97.8%
Coyote	22,925 af	spilling
Guadalupe	3,723 af	88.3%
Lexington	19,834 af	spilling
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	77.7%
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	101%

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2505. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Important Information

County creeks continue to recede.

The water district is releasing water from Stevens Creek, Lexington, Almaden, Calero, Guadalupe, Uvas, Chesbro and Anderson reservoirs to allow storage for continued runoff from the watersheds.

The water district emergency operations center continues to keep the telephone lines open 24 hours a day. As long as telephone lines are open 24 hours a day, the 1-888-Hey Noah (439-6624) is referring callers to the district number 408-265-2600 enabling callers to get a person rather than a recording.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water District

Thursday. Feb.12, 1998, 10 a.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Maintaining Partial Activation Level
Time/Day: 11:45 p.m., Sunday, Feb. 8
In response to: Receding stream flows and intermittent rainfall.
Switchboard: (408) 265-2600 is currently open regular business hours, only.

Sandbag Program and Sites

Crews are checking sand bag satellite sites and restocking sites as needed.

Reservoir Status

Reservoir	Capacity	%Full
Almaden	1,533 af	85.7%
Anderson	89,073 af	spilling
Calero	10,050 af	93.2%
Chesbro	8,952 af	92.5%
Coyote	22,925 af	spilling
Guadalupe	3,723 af	88.4%
Lexington	19,834 af	99.2%
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	72.2%
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	99.6%

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2505. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Hot Spots and Maintenance Activities

Lower Peninsula Watersheds

Matadero, Adobe and Stevens creeks–Crews are removing trees from the creek channels.

West Valley Watersheds

Saratoga, Calabazas and other creeks–Crews continue to remove trees from creek channels.

Guadalupe Watershed

Coyote-Alamitos Canal–Crews continue to remove slide material from canal.
Guadalupe Reservoir–Planners are making a site visit to check the spillway.

Coyote Watershed

N. Babb Creek–Crews are repairing a fence.
Southern Pacific Railroad–Meetings are scheduled today with district officials and the Southern Pacific Railroad regarding flooding and railroad property.
Various creeks–Crews are clearing trash racks and pier noses of debris.

Uvas-Llagas Watershed

Crews continue to be on the alert for creek blockages.

Important Information

County creeks continue to recede.

The water district is releasing water from all its reservoirs to allow storage for continued runoff from the watersheds.

During this calm before the predicted heavy rainfall on Saturday, Feb. 14, the water district emergency operations center is operating 24-hours a day with limited staff. The district switchboard is open only during regular business hours at this time.

The 1-888-Hey-Noah (1-888-439-6624) Flood Information Hot Line recording provides callers with sand bag site locations and weather information.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water District

Friday. Feb.13, 1998, 10 a.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Maintaining Partial Activation Level
Time/Day: 11:45 p.m., Sunday, Feb. 8
In response to: Receding stream flows and intermittent rainfall.
Switchboard: (408) 265-2600 is currently open regular business hours **only.**

Sandbag Program and Sites

By the end of the business day Wednesday, Feb. 11, 6,000 filled sandbags were delivered to Palo Alto Airport, 4,000 to Moffett Field in Mountain View, 12,000 to the San Jose satellite sites and 22,000 were filled and available at the district's Winfield warehouse. Currently all district satellite sites have filled sand bags and the sites will continue to be stocked on Friday, Feb. 13 and Saturday, Feb. 14.

Reservoir Status

Reservoir	Capacity	%Full
Almaden	1,533 af	78.2%
Anderson	89,073 af	spilling
Calero	10,050 af	93%
Chesbro	8,952 af	85.2%
Coyote	22,925 af	spilling
Guadalupe	3,723 af	88.9T
Lexington	19,834 af	97.6%
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	68.9%
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	99%

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2497. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Hot Spots and Maintenance Activities

Lower Peninsula Watersheds

San Francisquito Creek–Crews continue to remove trees on the creek near the Oak Hill Apartments on Sand Hill Road.
Permanente Creek–Crews are cleaning the creek channel between Caribbean and Highway 237.

West Valley Watersheds

Calabazas Creek–Thursday, Feb. 12 an erosion problem was discovered near Padero Court in Saratoga. The city is doing work to protect their street. Crews are cleaning outfalls on the creek near Mission College.

Guadalupe Watershed

Guadalupe Reservoir–After inspecting the spillway it was determined that concrete work will need to be done and plans are being made to do so.

Coyote Watershed

Coyote Creek–Crews continue to monitor the creek and are removing trees where needed to increase flow capacity.

Uvas-Llagas Watershed

Various creeks–California Conservation Corps crews are assisting the district in sandbagging levees and removing tules.
Chesbro Reservoir–Crews are clearing a crossing and bracing a wall.

Important Information

County creeks continue to recede.

The water district is releasing water from Almaden, Anderson, Calero, Guadalupe, Lexington, Stevens Creek, Uvas and Vasona reservoirs. Currently releases are planned to begin again at Chesbro Reservoir late Friday afternoon February 13 and Calero Reservoir releases will be stopped by the end of the night Friday.

Water district crews will be in the field on Saturday, Feb. 14 and the district switchboard will be open during the day.

The 1-888-Hey Noah (1-888-439-6624) Flood Information Hot Line recording provides callers with sand bag site locations and weather information.

Santa Clara County

Flood Emergency Update

Santa Clara Valley Water Distri

Saturday, Feb. 14, 1998, 10 a.m.

Emergency Operations Center

Current Status: Partial Activation/Level I Emergency
Up/Downgrade: Maintaining Partial Activation Level
Time/Day: 11:45 p.m., Sunday, Feb. 8
In response to: Receding stream flows and intermittent rainfall.
Switchboard: (408) 265-2600 will be open all day, until 8 p.m.

Sandbag Program and Sites

Currently all district satellite sites have filled sand bags; the sites will continue to be stocked throughout the day. The street addresses of those sites are available by calling the 1-888-HEY-NOAH Flood Information Hot Line.

Hot Spots and Maintenance Activities

Lower Peninsula Watersheds

San Francisquito Creek—Crews continue to remove trees and address erosion problems near Sand Hill Road.
Stevens Creek—Crews are removing downed trees at Central Avenue.
Adobe Creek—Crews are removing downed trees along this creek.

West Valley Watersheds

This watershed is in good shape this morning, with no reported problems. Crews are lending support to other watershed crews.

Guadalupe Watershed

Almaden-Calero Canal—Crews are removing slide material.
Coyote-Alamitos Canal—Crews are removing slide material.

Coyote Watershed

This watershed is in good shape this morning, with no reported problems. Crews are lending support to other watershed crews.

Uvas-Llagas Watershed

Various Creeks–Crews are removing trash and debris from trash racks and pier noses on creeks throughout the watershed.

Reservoir Status

Reservoir	Capacity	%Full
Almaden	1,533 af	75%
Anderson	89,073 af	spilling
Calero	10,050 af	93%
Chesbro	8,952 af	88%
Coyote	22,925 af	spilling
Guadalupe	3,723 af	88%
Lexington	19,834 af	98%
Pacheco	6,143 af	spilling
Stevens Ck	3,456 af	72%
Uvas	9,935 af	spilling
Vasona	400 af	spilling
Total Capacity	176,053 af	99%

For updates and information regarding this report, call the Emergency Public Information Office at (408) 265-2607 ext. 2497. For non-emergency or PRELIMINARY emergency information, visit our web site at www.scvwd.dst.ca.us.

Important Information

The expected storm front moved quickly through Santa Clara County this morning. Intermittent rainfall is expected to continue throughout the day.

District crews have been working steadily since Feb. 1 to keep county waterways clear. In order to allow the field personnel to be fully rested for the next round of storms, crews will not be in the field, **except in an emergency,** Sunday and Monday, Feb. 15 and 16. They will be back in the field Tuesday.

The water district will begin to release water again today from all reservoirs, making room for runoff from the next round of storms.

The 1-888-Hey Noah (1-888-439-6624) Flood Information Hot Line recording provides callers with sand bag site locations and weather information.

APPENDIX C
Initial Damage Estimate Report

California Standardized Emergency Management System

INITIAL DAMAGE ESTIMATE (IDE) REPORT

From County Operational Area: Santa Clara

Population: 1,497,577

Region: Coastal

Law Mutual Aid Region: II **Fire Mutual Aid Region: II**

City:

1. Incident/Event: El Nino 98 (DR 1203)
2. Incident Began: (date) 02/02/98 (time) 05:00 PM
3. Local Declaration: (date) 02/03/98
4. EOC Activated: (date) 02/02/98
5. Report prepared by: Bob Fields
6. This report as of: (date/time) 02/23/98 11:16 AM

DECLARATIONS	DATE REQUESTED	DATE GRANTED
7. Director's Concurrence		
8. Gubernatorial	02/03/98	02/04/98
9. SBA		
10. Presidential	02/03/98	02/07/98
10a. Individual Assistance	02/03/98	02/07/98
10b. Public Assistance	02/03/98	02/07/98

INDIVIDUAL ASSISTANCE (IA) DAMAGES (Click on red verbiage for Help Instructions)

	a. Destroyed	b. Major Damage	c. Minor Damage	d. Affected: (no phys.damage)	e. Estimated Loss	f. Estimated % Covered by Insurance
11. Primary Residence (include mobile homes)	1	836	356		$9,942,000	%
12. Business	0	4			$1,050,000	%
13. Other (i.e.outbuildings, etc)						%
14. Totals:	1	840	356	0	$10,992,000	0%

Comments:

Agricultural Damage: (Click on red verbiage for Help instructions)

	a. Acres Impacted	b.Number Impacted	c. Estimated Loss
15. Crops/Grazing Land			
16. Farm Buildings and Machinery			
17. Livestock			
18. Totals:			$0

PUBLIC ASSISTANCE (PA) DAMAGES

NOTE: CATEGORIES A & B - EXCLUDE NORMAL OPERATING COSTS

Category	Number of Sites	Estimated Loss
19. CAT A: Debris Removal and Disposal	169	$581,000
20. CAT B: Emergency Protective Measures	30	$2,570,000
21. CAT C: Road and Bridge Systems (non-federal)	7	$750,000
22. CAT D: Water Control Facilities (levees, dams & channels)	2	$50,000
23. CAT E: Public Buildings and Equipment	55	$5,700,000
24. CAT F: Public Utilities (water and power, etc.)	1	$100,000
25. CAT G: Park/Recreational/other	7	$95,000
26. Totals:	271	$9,846,000

Comments:

FEDERAL PROGRAM DAMAGES

	Estimated Costs
27. Federal Highways (Emergency Relief Program) (Damages to federal highway systems)	
28. U.S. Army Corps of Engineers (PL 84 - 99) (For emergency flood control projects)	
29. Natural Resources Conservation Service: (For emergency watershed rehabilitation)	
30. Other (describe):	
31. Totals	$0

32. Operational Area Point of Contact

Name:Bob Fields	Phone:408-299-3751	Pager:408-787-1813

Fax Number:408-294-4851	Alt. Phone Number: 408-299-3751	

33. When known enter estimated date to commence Preliminary Damage Assessments (PDA):
34a. Community Relations: Need for special language considerations? No
34b. If "Yes," please describe:

APPENDIX D
Postflood Meetings, Questions, and Responses

Questions and Comments
From the Public Meeting on 1998 Milpitas Flooding
Milpitas Community Center
April 6, 1998

1. **What is your understanding of the events that lead up to the flooding?**

At noon on Monday, February 2, 1998, the National Weather Service issued a "Flash Flood Warning" for the bay area including Santa Clara County. This information was conveyed to the 15 public works agencies in the County; and, the Santa Clara Valley Water District (District) began 24-hour operation of its Emergency Operations Center. The rainfall that occurred in the County was very heavy, as much as 8-to-9 inches in a 24-hour period. During the same 24-hour period over 3 inches of rainfall occurred in the Milpitas area. This heavy rainfall, together with already saturated watersheds, resulted in flooding at several locations throughout the County.

2. **What time did the pump shut down?**

The flood level in the Jurgens Pump Station reached a height that caused the engines to shut down about 1:30 a.m. on February 3, 1998.

3. **Why did it take so long to get the pump going again?**

The engines and controls serving the four pumps at the Jurgens Pump Station were inundated. These systems could not be repaired or replaced until the water receded. Batteries, solenoids, starters, alternators, and controls on all four Caterpillar diesel engines had to be replaced. The first pump was operable late in the evening of February 3. Two more pumps became usable on February 4, and the last, on February 5. During this period, portable pumps were available.

4. **What is the plan to prevent this (flooding) in the future?**

The District and the City of Milpitas are cooperating on a consultant study to prepare a historic chronology of activities and events affecting flood protection on Berryessa, Calera, and Lower Penitencia Creeks, and to reconstruct the actual flood event of February 1998 as best as possible. The findings of this study are expected to provide the information needed to identify corrective measures, and they will be made available to the public for review. The interim measures now in place will remain through at least one more season.

5. **Why did this (flooding) happen? Weren't the Brander Mill Apartments protected (against flooding?)**

The initial flood insurance study was completed by the Federal Emergency Management Agency (FEMA) nearly twenty years ago. That study only showed flooding on about the western-most one-third of the California Landings area ("California Landings" refers to the area bounded by Berryessa Creek, Lower Penitencia Creek, the railroad, and Dixon Landing Road) as a result of overtopping of the Lower Penitencia Creek levee. When the California Landings area was developed, the Lower Penitencia Creek levee was raised to provide the necessary level of protection. The developer submitted a request to FEMA to remove the flood hazard designation on the site based on the levee improvements. After review of considerable technical information, FEMA concurred and revised the maps to remove the flood hazard designation.

Within the last 2-to-4 years, FEMA conducted a periodic review of their flood map with specific emphasis on creeks with levees. This re-study did not show any changes or new flood hazards for the Brander Mill and Mill Creek Apartments.

Based on this history and information, neither the City of Milpitas nor the District suspected that the California Landings area might be subject to significant flooding. It is hoped that the consultant's reconstruction of the events will provide a better understanding of why the flooding occurred.

6. **What is the long-term solution at the confluence of Berryessa Creek and Calera Creek?**

See response to question number 4.

7. **Were high tides a factor (in the flooding)?**

High tides were present during the time of flooding. The significance of the effect on the level of flooding will be addressed in the consultant's study (see response to question number 4).

8. **The notification of residents for this meeting and the last meeting (held by the City of Milpitas) was not good.**

The notification for this meeting was performed by mailing a meeting invitation to residents and property owners who live in and near known areas of flooding. The mailing list was prepared using addresses from the County Assessor Parcel lists. Unfortunately, the District has discovered that the Assessor Parcel lists may not include many residents who live in apartments. The District is evaluating alternative methods of notification to ensure that this does not happen in the future.

The "last meeting" may refer to one of two meetings held by the City of Milpitas. The first was quickly arranged soon after the storm event with the management of the Mill Creek and Brander Mill apartments on February 7. Another meeting was arranged with the manager and board of the California Villas Homeowner Association on February 27. The City did not directly notify residents as the meetings were with the management and board. The extent of notification of their residents is not known by the City.

9. Was a call put out (from the City of Milpitas) to the District for assistance with pumps?

No. Due to the nature of the flooding, City Public Works staff felt that using the City's portable pumps and supplemental pumps from a local contractor would provide the quickest response and would be sufficient. The flood water receded at a rate that would have made additional pumps redundant, given the time to seek them, have them hauled to the site, and set-up in running order. If more pumping capacity had been necessary, aid would have been sought for more pumps from nearby cities or agencies such as the District.

10. What size pump was ordered?

Four portable pumps were provided (one 10-inch, one 8-inch, and two 6-inch). One 6-inch pump was not used because the other three were effectively withdrawing the storm water.

11. Why was a place like Brander Mill Apartments built in a flood area?

See response to question number 5.

12. How can tenants become aware that there is a flood risk?

National Weather Service warnings and alerts should be heeded. The interim remedial measures at the present location will remain in place until corrective improvements are constructed.

13. Why weren't people rescued? Where were the fire department and the police?

The City of Milpitas determined to implement a "shelter-in-place" strategy, in which residents were moved to upper floors of their building wherever possible. This strategy was used for several reasons:

- The situation developed very rapidly and was not predictable for any planned scenario.
- Emergency crews were also actively engaged in other parts of the City prior to the flooding that began in the California Landings area.
- There were simply not enough resources available to move everyone out of the area at once, exacerbated by creating a situation for relocation of displaced residents in the early hours of the morning, once evacuated.
- Life threatening rescues were being performed as situations became known.

Rescue was an impractical option given the available resources and the number of residents involved. Another factor was the early morning hour of occurrence, which held potential for causing problems with life safety and panic, since people would be awakened out of a sound sleep, attempt to escape during darkness, and be caught in the flood—endangering themselves more than if they had remained in their homes.

14. Why was the backup pump moved to the levee?

The most effective way to draw down the storm water was to get to the lowest points in the drainage system. The 72-inch pipeline that discharges all storm water from the Jurgens Pump Station to Lower Penitencia Creek was accessible at a valve structure next to the levee where it enters the creek. The 10-inch pump was placed there. The only other alternative would have been to run above-ground lines for up to 200 feet, which would have taken hours to install and would not have been as effective.

15. Why did some people receive notices that they were not in a flood zone?

All flood zone information given to persons who contact the City of Milpitas is based upon FEMA flood maps and regulations, known as the National Flood Insurance Program. After the improvement to Lower Penitencia Creek levee by the developer, FEMA, upon reviewing the improvements and supporting documentation, issued a Letter of Map Revision on March 9, 1992 which removed the California Landings area from the "Special Flood Hazard Area" designation, which refers to areas of expected severe flooding. All properties within this area were given a zone "B" designation. Any inquiries about the flood zone designation in the California Landings area would have been given a "B" zone response by City staff. A "B" designation does indicate flooding up to one foot in depth, and optional flood insurance in this zone has always been available at a considerably lower rate.

Also, in November 1997, the City distributed the brochure entitled ***Flooding Within the City of Milpitas*** to all addresses within the City. Flood information and flood insurance are addressed in this three page document. For flood insurance information, it refers readers to their insurance agent or the National Flood Insurance Program at (800) 638-6620. It offers additional flood information by calling the City of Milpitas Engineering Division at (408) 942-2372.

Also see response to question number 5.

16. What about the speakers on the high towers? (Can they be used to notify people in an emergency situation?)

The speakers are for a warning and information system. However, due to the flood inundation, a decision was made (by PG&E, property management, the homeowners' association, and Fire Department representatives) to de-energize the electrical service to the area, rather that risk shock or electrocution to residents or emergency personnel. As a result, speakers were not operable. The electrical risk far outweighed the practical functionality of the speakers, particularly given the "shelter in place" strategy.

17. What is the status of the FEMA Zone B certification?

The District does not know what action (if any) FEMA intends to take on the Zone B certification. Any action by FEMA will likely depend on the future actions taken by the agencies involved.

18. Doesn't the practice of constructing levees and confining streams inherently cause flooding problems?

It is not believed that the levees contributed to the problem. The consultant's analysis will provide the appropriate information to determine the causes.

See response to question number 4.

19. If the owners of Brander Mill and Mill Creek have flood insurance, aren't they obligated to inform tenants (of the risk of flooding)? Is there some law or regulation in regard to this?

The laws relating to insurance are complex and often dependent on the terms of particular insurance policies and the provision of individual rental agreements or leases. Tenants should consult their landlords regarding individual situations.

20. Was there a water main break?

Yes. The break involved a domestic water line under a storm drain channel near Cadillac Court. It was west of Lower Penitencia Creek in the industrial area and did not contribute to the flooding.

21. Why were we told not to drink the water?

As the broken water line was submerged under storm water, there was a remote potential that storm water could be "sucked" into the domestic water system if there was a pressure loss. At the time, the City of Milpitas was also receiving notices from its supplier in this area, the San Francisco Public Utility Commission, that their supply line was experiencing turbidity due to storms in the Sierra and Sunol areas. The City decided that the prudent action would be to inform the customers of possible contamination and to recommend the boiling of water. The alert was issued for the area surrounded by I-880, Calaveras Boulevard, the Union Pacific Railroad tracks, and Dixon Landing Road. Meanwhile, the water line in the area of the break was shut off and water samples were drawn at various locations and sent to a laboratory for analysis. These tests take 24 hours as they involve culturing bacteria. At the end of this period, test results proved negative and the boil water alert was rescinded.

22. What was the rationale for removing an area from the flood zone after a higher levee (at Lower Penitencia Creek) had been constructed?

See response to question number 5.

23. The apartment management needs to get into the loop.

This statement does not pose a question.

24. People threw away many items because they were told by the City of Milpitas that there was sewage in the water. A second letter from the City indicated that there was no sewage in the water.

There was no sewage in the domestic water system. City staff were neither aware of any sewage in the flood or storm water nor aware of a letter stating this. It is noted that the Brander Mill Apartment management had contacted the Fire Department shortly after the flooding occurred. They had two questions:

- Was there a sewage line break that could contaminate flood waters?
- If so, how should they proceed with clean-up to assure that the apartments would be habitable?

While at the time no sewage breaks could be confirmed, the flooding storm water was obviously not clean. Therefore precautions were recommended and a conservative clean-up level was established to minimize/eliminate any health concerns from contaminated water.

The Santa Clara County Department of Environmental Health prepared a flyer titled *Flood Clean-Up*. Contact the Department of Environmental Health at (408) 299-6060 to receive a copy. This flyer was provided to Brander Mill management for distribution to residents. Copies were also made available at the Milpitas City Hall.

25. Why was there a gap in the levee? Who inspects the levees? Levee inspections should have been performed because this was an El Nino year.

A consultant study is underway to determine why the flooding occurred; levees will be studied as a part of this effort in order to help answer this question. See response to question number 4.

Operations and maintenance staff from the District inspect the levees. The current practice is to inspect all elements of flood control facilities at least twice annually.

26. Why weren't emergency response personnel better prepared? Why weren't there boats or rafts (to assist residents)? If emergency response personnel were overwhelmed, why didn't they call for mutual aid?

Since a flood in the California Landings area was not expected, no specific response had been planned. It is impractical to maintain first response resources such as boats and rafts for infrequent events. A plan was being prepared by the City of Milpitas to evacuate via diesel-powered dump trucks if the situation continued. Upon observing that the water was receding, additional rescue operations were not necessary. Mutual aid was not an option, since every community in the area was experiencing similar circumstances from the storm. Mutual aid from further away would have rendered response time far beyond the useful window of opportunity.

27. What about spores and fungus?

The California Department of Health Services, Indoor Air Quality Section, has prepared a fact sheet entitled ***Mold in My Home: What Do I Do?*** which answers common questions regarding the health effects, detection, and clean-up of mold. Call (510) 540-2476 to order a copy of this fact sheet.

In addition, the Santa Clara County Department of Environmental Health has prepared a *Flood Clean-Up* fact sheet. You can receive this fact sheet by calling (408) 299-6060.

28. There needs to be more mutual aid between the City of Milpitas and the District.

The State Office of Emergency Services coordinates mutual aid when an event necessitates it. Had there been a need for mutual aid, this source would have been sought by the City. Mutual aid preparations between the City and the District (or any other agency) can always be improved and will be further discussed among the agencies.

Questions and Comments
from the
Public Meeting on 1998 Calabazas Creek Flooding
Quinlan Community Center, Cupertino
March 30, 1998

1) **There is an 8-inch crack in the creek. Thirty years ago concrete (rubble) was placed in the creek; and, ten years ago the concrete was removed. Who is going to fix this? This situation will affect the resident's yard and house. (Question from resident at Vicksburg Drive.)**

This and other problems will be inspected by Santa Clara Valley Water District (District) staff. If the problems that have been brought to our attention are on sections of creek that are privately owned, the responsibility to perform needed bank stabilization work is the property owner's. District maintenance planners would be happy to meet with you to discuss your options. Any work performed by a property owner requires a permit from the District. If the problem is on a section of creek where the District has legal title, i.e. easement or fee title, the District may fix the problem subject to funding availability and regulatory clearances. All problems that have been brought to our attention will be evaluated and prioritized based on the relative severity of the problem when compared to other problems in the flood control zone.

If you have specific questions or concerns regarding creek maintenance issues, contact the District's Maintenance Field Operations Unit at (408) 265-2600, extension 2378.

2) **When will the culvert (at Bollinger) be fixed? What about the bridge? What are the long and short term issues? Residents are at risk because there is no funding to fix the culvert at Bollinger. What can residents do to ensure future funding? What are the funding issues in the North Central Zone? Why didn't the cities evacuate the residents? (Questions from resident on East Estates Drive near Bollinger.)**

There is no plan to replace the bridge on Calabazas Creek at Bollinger Avenue. Calabazas Creek is located in the District's North Central Flood Control Zone where the benefit assessment program, which funds maintenance and capital improvements, will expire in the year 2000. Without an additional source of revenue, the District will be unable to continue to construct corrective measures and the level of service of the maintenance program will decline. The District's Board of Directors are discussing, with citizens, cities, and advisory committees, the possibility of putting a funding measure before the voters in November 1998, but no decisions have been made on when or the content and extent of the program. Calabazas Creek is a high priority in the North Central Zone and is likely to be included if a new funding source is proposed.

It is not always possible to accurately determine in advance when evacuation is necessary. During emergency situations such as earthquake, flooding, etc., emergency staff are in the field reviewing and assessing the situation. An emergency operations center is opened during a state of emergency. It is also important that when residents feel the necessity for assistance that they call the City immediately. The City of Cupertino opened a staging area for evacuation and was ready to receive and relocate if needed.

3) **Will a sandbag wall (along Calabazas Creek) fix the problem at least for next year?**

A sandbag wall similar to the one(s) placed in February provides some level of protection, but will not "fix" the problem of inadequate capacity on Calabazas Creek. Sandbags are effective for temporarily controlling floodwaters that threaten individual properties. They are not effective for increasing the flood-carrying capacity of a stream. The construction of a sandbag wall above the natural grade of a creek bank can induce flooding on neighboring properties. For this reason, the District does not recommend the use of sandbags in raising the grade level along a watercourse. Sandbags are best used to seal off doorway, foundation vents and other entrances to homes and garages. The District offers public training sessions on how to protect your home using sandbags and other flood-proofing materials. Session dates for next fall have not yet been set, but will be scheduled in October, November, and December, 1998. For information and further details, please contact the District's Public Information Office at (408) 265-2600.

4) **Resident could not get sandbags delivered to build a wall to protect home. Thousands of sandbags were needed. The City did not complete the sandbag wall that they started to build.**

The District provides free, unlimited, filled sandbags to residents of Santa Clara County to help you prepare for winter storms. Sandbags are available at satellite sites throughout the county. For the location nearest you call 1-888-HEY-NOAH.

Resources are not available to deliver sandbags to specific locations throughout the county, even during non-emergency periods.

5) **The neighborhood needs to be more organized.**

The neighbors have several options to "organize" themselves. For emergency response purposes, they should contact Marie Moore, the City of Cupertino's Emergency Coordinator. Neighbors can also take some stewardship responsibility for the creek by joining the District's Adopt-a-Creek program, or by organizing one or two cleanup days per year. Call the District's Public Information Office at (408) 265-2600 for more information about the Adopt-a-Creek program.

6) **There should be enough money (to address the flooding problems). This is a wealthy area.**

See answer to question 2. The North Central Zone has the lowest benefit assessment rate of the five District flood control zones. The current rate is less than $20 per year for the average homeowner.

7) **How can citizens participate in the Zone Advisory Committees?**

Zone Advisory Committee meetings are open to the public. Any resident can call the District's Clerk of the Board at (408) 265-2600 and request a copy of the North Central Zone Advisory Committee schedule and meeting agendas.

8) **How do you get rid of sandbags?**

Sandbags can be used as a soil amendment in your garden or lawn area. If you need to dispose of sandbags they can be brought back to the following locations until May 15, 1998:

Palo Alto—at the end of Embarcadero Road;
Mountain View—on Moffett Boulevard near Hwy. 85 at the PG&E Substation;
San Jose—Willow Street at Hwy. 87 next to Franciscan Press;
Morgan Hill—at the El Toro Fire Station on Old Monterey Road;

After May 15 return sandbags to:

San Jose—Santa Clara Valley Water District's Winfield Yard at 5905 Winfield near Coleman Road.

9) **Who owns the Bollinger Bridge?**

The jurisdictional boundary between the City of San Jose and the City of Cupertino lies in the centerline of Bollinger Road. There are three jurisdictions that are involved in the culvert at Bollinger Road and Calabazas Creek: the City of San Jose, the Santa Clara Valley Water District, and the City of Cupertino.

10) **What standard was the Bollinger Bridge built to?**

Bollinger Bridge was apparently built in stages or segments. The original construction was many years ago. The standards for construction are not known at this time.

11) Was flooding caused by alterations made to the creek? Who is responsible for this?

The flooding at Bollinger Bridge was at least partially the result of a culvert unable to handle an extreme rainfall event.

12) Did fencing at Miller Avenue cause flooding?

The fence at the top of the parapet wall was not the cause of any flooding since the water level, upon reaching the fence, was at flood stage. Debris buildup on the fence may have had some minor influence on the direction of water after leaving the creek; however, any influence was far less important than the slope of the street and surrounding areas. The fence is installed on the box for safety to keep children from jumping or falling from it. The new bridge will also have a fence.

13) Why is there no flood insurance requirement?

Flood insurance maps unfortunately do not show all the potential flood hazard areas. The District prepares our own flood maps which utilize and supplement the flood insurance maps. Flood insurance maps are a good place to start but they have shortcomings. In California, 35 percent of the flood insurance claims came from areas <u>not</u> designated on the maps.

14) There are hazardous materials stored near the creek. After flooding, the hazardous materials are in the creek.

If you observe hazardous materials in the creek (i.e. paint cans, used motor oil, car batteries, etc.), do not touch the material or try to remove it yourself. If there is an immediate threat to health or environment, call 911. Otherwise, call the District Pollution Hotline, 24-hours a day at (888) 510-5151. Provide a description of the hazardous materials, the quantity and location of the material, and leave your name and phone number in case we need to call you back. District staff are on call 24-hours a day to respond to emergencies as needed.

In order to minimize stormwater pollution, the District recommends that the public store all hazardous materials inside, out of the rain and away from any creek or storm drain.

15) A resident who lives at Stevens Creek Boulevard and Santa Clara Street was driving on a muddy street when she lost control of her car. The car crashed, and she was hospitalized. While she was in the hospital, her house was flooded. She has flood insurance, but it will not cover all of her damages. How many more times will this (flooding) happen? What will be done to prevent flooding? Why doesn't flood insurance cover landscaping? Who is available to sandbag her house? (A church group sandbagged her house.)

Immediately after Calabazas Creek at Miller and Bollinger overflowed, roads such as Wolfe Road, Stevens Creek Boulevard, and Vallco Parkway had a considerable amount of debris and silt. There was a heavy demand on City forces to protect property during this time. When the creek subsided, a considerable amount of mud was left in all the areas mentioned above. However, the crews were still so overburdened that the clean-up could not begin until the following day when other demands were satisfied.

The area referenced is part of the area which will be protected by the District's project which is currently underway between Homestead Road and Miller Avenue along Calabazas Creek. This work is expected to be completed before next winter.

The District does not have resources to provide assistance with sandbags to individual homeowners. The District recommends that you contact churches, scout troops, or other charitable organizations if you need assistance with sandbags.

16) **A resident who lives on Brookwell Drive asked if the bridges at Bollinger Road, Tantau Avenue, and Miller Avenue were the cause of the (flooding) problem.**

The bridges at Tantau Avenue, Miller Avenue, and Bollinger Road are not sufficient to carry the current 1 percent (100-year) flood design standard. In addition, in many places, the creek section cannot carry the 1 percent flow within the creek banks. The bridges and creek channel from Miller Avenue north (downstream) are currently under construction with a District project and are expected to be completed before next winter. The bridges and creek upstream of Miller Avenue would be investigated if a new funding source is approved.

17) **What is the plan to address the load distribution of water into the storm drain system on La Mar Drive? The front yards on La Mar Drive flood, and the City has not responded to the issue. Cars driving on La Mar Drive splash water onto their property and threaten to flood their garage. Can the street be blocked off during flood events?**

The La Mar Drive storm drain system ceases to operate when Calabazas Creek reaches a water level higher that the storm outfall. Storm lines are designed for very low flow in comparison to creeks. Excess storm water is carried by the roadway, which acts as a large open channel. However, in areas where there is a dip or sag in the roadway, water tends to accumulate. As long as the floods do not threaten the homes, it is not considered a high priority for the City, other than to warn motorists of the situation. La Mar Drive will be listed as a location that should be addressed during heavy rains where there is a potential of flooding.

18) **A resident from East Estates Drive noted that differences in the Bollinger Bridge between the Cupertino and San Jose sides have created a problem. What is being done with the old Bollinger Bridge?**

See answers to questions 2, 6, 16, and 31.

19) **There was tremendous erosion associated with these floods. Was this a "70-year" event?**

Preliminary streamflow data for Calabazas Creek near Wilcox High School showed a recorded peak flowrate of 2,970 cubic feet per second (cfs), about a 70-year event, occurred on February 3, 1998 at about 1:00 a.m. On February 7, 1998 at 1:47 p.m., a peak flow rate of approximately 2,450 cfs was recorded which is equivalent to a 25-year event. It should be noted that the creek spilled upstream from the recording gage at Miller and Bollinger crossings. Therefore, the streamflows were greater than what were recorded at Miller.

20) **District Funding sunsets in 2000.**

See answers to questions 2 and 6.

21) **Thanks to Bert Viskovich (of the City of Cupertino).**

The comment has been noted.

22) **What are the plans to fix erosion at Calabazas Creek at Belvedere Lane in San Jose?**

Like other problems in the North Central Zone, this will be evaluated on the basis of severity and funding. A stabilization plan will be determined after we inspect the site this spring.

23) **The storm drains near Bollinger back up and create hydroplaning problems. What is being done to address this?**

See response to question number 17.

24) **Why can't bulldozers from the City of San Jose help remove mud from resident's driveways? What about the mud moved from sidewalks onto the parking strip?**

In general, the first priority for the use of City resources is to address situations in the public right-of-way or on public property. The use of City resources on private property is usually prohibited unless there is a threat to human health or safety, a threat of damage to public property, the situation is a public nuisance, or City action is one of the causes of the situation.

With respect to the parking strip, cleaning is restricted if that cleaning will damage any landscaping.

25) **Erosion along Calabazas Creek has been going on for a long time. The banks have not been in good shape for many years. There are dangling outfalls along the creek. (Has there been) lots of massive erosion from the flood?**

Yes, the flood has resulted in a lot of erosion. Creek bank erosion is a serious, ongoing, and costly problem on Calabazas Creek. But as an unimproved channel, the funds available to perform bank stabilization work is limited. In spite of this limitation, in the last ten years more erosion repair projects have been completed on Calabazas Creek than any other creek in the North Central Zone.

The District conducted a creek walk on April 18, 1998 with the Friends of Calabazas Creek. One of the purposes of the walk was to assess the erosion problems.

Bank erosion is one of the issues which would be addressed in a study of the creek if a new program is funded.

26) **Is the District assessing the erosion problems? Should homeowners let the District know about erosion that they observe?**

District staff periodically inspect the creek to assess erosion problems. The District encourages homeowners to inform the District about any erosion they may observe by calling the District's Maintenance Field Operations Unit at (408) 265-2600, extension 2378.

Also, see response to question numbers 1 and 26.

27) **What is the District doing to keep the channel debris-free?**

District crews periodically inspect the creek and remove obstructions to flow. This does not necessarily mean that the creek will be free from all debris. Our maintenance goal is to target those conditions that could significantly retard flood flows.

28) **What is the status of (flood control) projects upstream of Miller?**

See answers to questions 2, 6, 16, and 25.

29) **What is the District doing in the short term in regards to erosion?**

See response to questions 19, 22, 25, and 26.

30) **How will the District communicate back to the community on an ongoing basis?**

The sign-in sheet used at the public meeting will be the basis for a mailing list for any future meetings or written communications. The District will also continue to mail a

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seasonal notification to all residents in the 1 percent floodplain. We will also continue to place sandbag location advertisements in the Cupertino Courier which we have done the past three years.

31) **Can the old Belvedere Bridge (a.k.a. old Bollinger Bridge) be removed? It serves no purpose and creates problems. The retaining wall near the bridge is ready to "go" and could create more problems.**

District staff will inspect the site and determine whether or not the bridge will be removed. The bridge is owned by the District.

32) **The property lines are at the fence due to erosion. (Comment from resident on East Estates Drive whose property backs up to Calabazas Creek.)**

This comment has been noted. See response to question number 1.

33) **What is the status of the work at Pruneridge Avenue and Homestead Road? (Question from resident at Giannini Drive.)**

The work at Pruneridge Avenue is about 40 percent complete. One-half of each new box culvert structure—the downstream portion—has been placed, and the street section has been replaced. The work has stopped until weather permits because the remaining work on the downstream side requires work in the channel bottom. Once all work on the downstream side is completed, traffic will be switched to the north side of the street and the upstream portions of the new boxes will be built. Additionally, this summer, the channel will be widened and gabion baskets will be installed between Pruneridge and Homestead Avenues

34) **How will the new Kaiser development impact Giannini Drive?**

The Kaiser Permanente development has a condition which was part of their project approval that requires them to build the sound wall along their south property line so that surface waters from the streets to the south, including Giannini Drive, Hillsdale Avenue, and Hubbard Avenue, will be able to pass under the wall. They are also required to make provisions to convey the surface water through their site.

35) **If there was a plan, this problem would not have occurred.**

See response to question numbers 2, 16, and 25.

36) **Who communicates information regarding emergency preparedness? How were residents informed?**

The District has a comprehensive public outreach program for flood preparedness which includes radio, newspaper, and transit advertising which gives residents flood safety tips

and encourages them to call the 1-888-HEY-NOAH telephone number for a flood safety information packet, which is a very complete set of information. In 1997/98, given the El Nino forecast, the District doubled its radio and newspaper advertising and received extensive news media coverage of our efforts. Informational postcards were sent to all floodplain residents informing them of the risks to their property. District staff attended more than 50 community meetings to speak about the issue of flood safety and flood preparedness.

37) **What is the danger of having mud (from the flooding) in the crawl space under your house? How do you clean the crawl space of fungus (and other contaminants)?**

The Santa Clara County Department of Environmental Health recommends that mud deposited in the crawl space by floodwaters should be removed. Once the mud is removed, use a fan or a blower to ventilate the crawl space and dry it out. Most harmful microorganism will die within a few months after the crawl space has dried. For more information on flood clean-up, call the Santa Clara County Department of Environmental Health at (408) 299-6060.

38) **Is erosion undermining the foundation of my house? Is the high water table causing this (foundation problem)? Who can help?**

If a homeowner is experiencing erosion or drainage problems, they should contact a contractor to determine appropriate corrective measures.

39) **Floodwall behind Bollinger?**

There is no floodwall behind Bollinger. If the question refers to the old Bollinger Bridge abutment, see response to question number 31.

40) **A tree caught on the Bollinger Bridge caused the flooding. The District cut the tree into small pieces which floated downstream and got caught on the Miller Avenue Bridge. Why wasn't the tree removed?**

One standard maintenance practice for removing tree blockages is the "cut and float" method. This method consists of cutting a tree into approximately 2-foot lengths. These logs are small enough to safely pass under bridges on Calabazas Creek. The "cut and float" method is used in locations where removal of the tree may pose unsafe conditions, or during emergency situations where cranes are not immediately available. In this case, the tree was removed as soon as possible using the "cut and float" method because District cranes were responding to other flood emergencies throughout the County. Since the flows that occurred on February 3, 1998, exceeded the bridge capacity, flooding would have occurred even if the tree was not in the channel.

41) The Department of Fish and Game should have been invited to this meeting.

This comment has been noted. During the flood emergency, District staff coordinated with representatives from the Department of Fish and Game on matters that require notification under the Fish and Game Code. They were not invited since it was not apparent that they would have anything to add to the meeting. The purpose of the meeting was to get feedback from the community about the flooding to better understand what and how it happened from the residents' perspective. If residents have particular reasons to contact the Department, District staff will facilitate that contact.

42) How quickly and actively does the District fix problems on District property in order to prevent problems on private property?

The District's response time to resolve creek-related problems varies depending on the situation. During emergencies, response time is affected by how District resources are responding to emergency needs throughout the County. Nonetheless, all requests are treated seriously; and staff are dispatched to make preliminary assessments of the problems and to make subjective judgments about which problems to address first. Many emergency response activities are exempt from normal permitting requirements, but erosion repairs require that the District notify agencies such as the U. S. Army Corps of Engineers before the work commences and the Department of Fish and Game after the work is done. Once the emergency is over, normal permitting requirements apply. In the case of erosion repairs, which many residents have expressed concerns about, the time to correct the problems can be very lengthy. The problem is first evaluated and prioritized based on the relative severity of the problem when compared to other problems in the flood control zone. If there is sufficient funding available to do the work, permit acquisition proceeds. First, a work order is written that describes the proposed method to repair the problem. Next, an environmental document must be prepared and applications are submitted to agencies such as the Army Corps of Engineers, the San Francisco Bay Regional Water Quality Control Board, and the Department of Fish and Game. Once permits have been obtained, work can begin. Depending on the severity of the problem, many years can pass before some problem sites can be repaired.

43) What are the inter-jurisdictional issues for both (long term) planning and for emergencies? How do agencies work together?

When the District develops a long term plan to solve flooding, erosion, and maintenance problems, we work very closely with the cities and the residents. During the planning process, there are several public meetings and, eventually, a public hearing on the proposed plan.

In the fall of every year the District meets with all 15 Public Works Directors throughout Santa Clara County to discuss emergency planning and to explain the District's flood control maintenance and operations programs as well as its monitoring capabilities during

flood or flash flood events. When a Flood or Flash Flood "Warning" is issued by the National Weather Service, the District begins 24-hour operations of its Emergency Operations Center and so advises the City Public Works agencies.

44) How can communication be more proactive?

Communication goes both ways. The District has done a lot to communicate with the general public but we are always looking for opportunities to communicate more on a "grass roots" level. Whenever requested to do so, District staff will meet with homeowner groups and neighborhood associations to discuss concerns. Whenever there has been flooding in an area, we always host a post-flood meeting. Please contact Teddy Morse, our public information officer, with requests for speakers at neighborhood events.

45) Illegal dumping and kids playing in the creeks cause problems. (Comment from resident on Vicksburg Drive between Miller Avenue and East Estates Drive.)

For trespassing and dumping of non-hazardous materials in creeks and/or on District property, call Kay Moss at the District's Community Projects Review Unit (408) 265-2600, or call the Maintenance Field Operations Unit at (408) 265-2600, extension 2378. For dumping of hazardous materials (paint, motor oil, car batteries, etc.) in creeks and/or on District property, call the District's Pollution Hotline 24 hours a day at (888) 510-5151.

46) Regnart Creek almost flooded. There are inter-jurisdictional issues for in the area of East Estates Drive and Vicksburg Drive.

Regnart Creek is considered adequate to handle a 1 percent flood, but it is possible that greater floods can occur.

47) Was there a vote for the project from Homestead to Pruneridge Avenue? Where will the 100-year floodplain be after the project is completed?

The project which is now under construction between Miller Avenue and Homestead Avenue was part of the program proposed by the District and approved by the voters in 1990. When the construction is completed, the District will submit a request to the Federal Emergency Management Agency (FEMA) to remove the flood hazard designation.

48) What about the sediment that is in the channel now?

Inspections of the creek are conducted periodically. If there is a need for sediment removal, appropriate action is taken. If you have a specific area of concern, contact the District's Maintenance Field Operations Unit at (408) 265-2600, extension 2378.

54) **Who is responsible for cleaning mud in the street (near a creekside park)?**

The City is responsible for cleaning mud from the streets.

55) **The bridge on Bollinger is hazardous and has caused flooding twice last month. There is an urgent need to widen it. Several houses were flooded. The bridge needs to be widened. The creek is eroding the wall of the creek and is threatening my property. The creek is touching the fencing of my house. (Comments from resident on Bollinger Road.)**

See response to question number 1.

56) **My house backs up to Regnart very close to where it empties into Calabazas Creek. Above the concrete liner, the bank is slowly eroding away. I am worried that part of my backyard will end up in the creek. Also, I am at the corner of East Estates and Vicksburg where Regnart goes under East Estates; the water was very near the top of the tunnel, and I am concerned that the same thing will happen there as happened at Miller. How do we determine if we need flood insurance? Is the chain link fence along the creek at the rear of my property the responsibility of the District? (Comments and questions from resident at Vicksburg Drive.)**

For questions regarding erosion, see response to question number 1.

Anyone can purchase flood insurance, regardless of where they live. Contact your insurance agent. To ascertain the potential risk of flooding, determine whether your home or business is in the 1 percent floodplain. If your home lies within the 1 percent floodplain, it is estimated that the risk of flooding in any given year is 1 percent or greater. Call your City's planning department to determine if your property lies within the 1 percent floodplain. Be aware that homes outside the 1 percent floodplain are still susceptible to flooding during very large flood events. Statewide, approximately 30 percent of all flood damaged properties are **not** located in a FEMA designated flood hazard area.

To determine responsibility for fence maintenance, contact Dennis Ely, Maintenance Planner, at (408) 265-2607, extension 2377.

57) **How do I get the agenda for the District's Board meetings?**

District Board meetings are held on the first and third Tuesday of each month. The agenda for the meetings are posted on the District's web page on the Friday before the Board meeting. The address for the District's web page is www.scvwd.gov. From the homepage, click on the "Water District Background & Your Board of Directors" icon and then select the "Agenda for the Week". The District can also send you the agendas via mail. Call Michele Colabella in the District's Clerk of the Board Unit at (408) 265-2600, and ask to be placed on the mailing list.

Questions and Comments
from the
Public Meeting on 1998 San Francisquito Creek Flooding
Cubberly Community Center, Palo Alto
April 14, 1998

1. **Please give a brief explanation of what happened during the flood event of February 3, 1998.**

   At noon on Monday, February 2, 1998, the National Weather Service issued a "Flash Flood Warning" for the bay area counties, including Santa Clara County. The Santa Clara Valley Water District (District) conveyed this information to the 15 public works agencies in the County, and the District began 24-hour operation of its Emergency Operations Center (EOC). The rainfall that occurred in the County was very heavy, as much as 8 or 9 inches in a 24-hour period. Preliminary data indicate that the flowrate at the United States Geological Survey (USGS) streamflow station near the Stanford golf course was between 6,500 cubic feet per second (cfs) and 8,000 cfs. This is the highest flowrate ever recorded at that station since its installation in the 1930s. The previous historic record flood was 5,560 cfs in 1955. This heavy rainfall together with the already saturated watersheds resulted in flooding adjacent to San Francisquito Creek as well as at several other locations throughout the County.

2. **What is the District doing to fix the creek problem? The District should immediately begin to study the creek and should start work as soon as possible. The District should fully fund the study. The District should work in close cooperation with the City of Palo Alto. Director Greg Zlotnick should support this. (Questions from a representative of the Duvenek Association.)**

   It was requested that Director Zlotnick respond to these questions. Director Zlotnick's response is paraphrased below:

   Those are tough questions. Unfortunately, I can not give you the answer you want, which is that we will fix this tomorrow, and next year there will not be a risk of anything happening. . .

   The CRMP (San Francisquito Creek Coordinated Resource Management and Planning) is a process which is ongoing. The District has been engaged in that since it began, and is a major partner with funding and technical work. It is important to understand that the CRMP will not provide the answer to what is going to happen, but it does provide background . . .

What we are looking at for San Francisquito is a project that will range from probably 70 million to 100 million plus dollars. That's a lot of money. Bob Moss did us a favor to tell us about the Proposition 218 impacts. Our benefit assessment will sunset in the year 2000. The benefit assessment was put on the ballot and passed in 1986. It had a sunset built into it because it was felt that was necessary to get public support. Now we are living with that sunset and the fact that Proposition 218 is now in place. . . The direction we will probably take is along the lines of a special tax . . . We still need to get a two-thirds vote for that, but (a special tax) gives us more flexibility as to how we will assess fees.

One of the things that I did when I got on the Board . . . was I moved San Francisquito up to "priority" from "subpriority." There was no project, but there was a community effort underway, the CRMP process, and I moved it to "priority" because I knew that this was an issue that was important to Palo Alto . . .

There needs to be a lot of studies done to get this going (such as hydrogeology, hydrology, environmental, and geomorphology studies), regardless of the alternative selected. One thing that I am not willing to see . . . is that all of these jurisdictions (who) can't get their act together (may) hold up work that everybody knows has to get done. So I am committed (to promote the idea) that the District will front the money for some of those studies, maybe to the tune of one-quarter of a million dollars or more . . . So even if it takes 10 years before we turn a spade of dirt, we at least start that process now.

3. **When will the study (of San Francisquito Creek) start? How much will the District fund? After the study is completed, when will the work begin? (Questions from resident at De Soto Drive.)**

The District has initiated action to prepare topographic surveys which are needed for the study, but any study on San Francisquito Creek to find a solution to the flood problem will be a costly and lengthy endeavor, from five-to-six million dollars and at least six years. This is because of several reasons: 1) the number of jurisdictions involved; 2) an active, participating community; 3) the length of the creek and watershed which would need to be investigated considering the possible alternatives already identified; 4) the environmentally sensitive creek habitat and endangered species issues; 5) erosion, bank stability, and other maintenance problems; and 6) many regulatory requirements. The study would be a combined Engineer's Feasibility Report (ER) and Environmental Impact Statement (EIS). Once the ER/EIS is adopted and funding is identified, it would likely take one-to-two years to acquire the necessary right-of-way and prepare construction drawings. Actual construction could take two-to-five years depending on the final alternative selected. At this time, there is no identified source of funds to implement any plan which might be developed and proposed.

4. **The problem is common to both communities (Menlo Park and Palo Alto). The CRMP report says that the one percent flow is 9,300 cubic feet per second (cfs). This is not a good estimate. Is there a legal requirement to only consider solving the one percent problem? Why not do a smaller project that provides two percent protection or less? (Questions from a resident of Menlo Park.)**

It is not required by law to build flood protection to the one percent standard. The level of flood protection provided by a project is a reflection of the desires of the community. If it is desired to reduce flood insurance rates and other floodplain management requirements from the Federal Emergency Management Agency (FEMA), then the one percent standard is necessary. A lesser standard was used in the 1960s when the present levees and floodwalls were constructed. That was considered sufficient at that time.

5. **Who is responsible for the maintenance and repair of levees? There are ruts in the levees from equipment. (This question refers to low levees upstream of Chaucer Street that were overtopped during the flood.)**

The City of Palo Alto is responsible for maintaining levees in this area, which is a part of the Timothy Hopkins Creekside Park. The levee was inspected by City and District staff who determined that the levee was not significantly damaged during the flooding.

6. **What was the frequency of the flood? (Question from resident at De Soto Drive.)**

The USGS preliminary estimate of the February 3, 1998 peak flow on San Francisquito Creek near the Stanford golf course is between 6,500 cfs and 8,000 cfs. Using USGS's standard, this corresponds to a 60-year event to over a 100-year event.

7. **East Palo Alto is building the Gateway complex and an apartment complex. Two other developments are also being built. Is this runoff going to add to the problem? What is the cumulative effect? What power do we have to make the developers handle the problem?**

The City of Palo Alto and the District are aware of two large development projects currently under review by the City of East Palo Alto that are adjacent to San Francisquito Creek. There is a commercial development proposed in the area commonly known as "Whiskey Gulch" and a multi-family development slated to replace the existing trailer park along West Bayshore Road adjacent to the creek. The City of East Palo Alto has approval authority for these projects and is the lead agency for their environmental review. Analysis of potential flooding impacts, as well as water quality impacts, are typically included in the environmental review process.

The draft environmental review documents for these projects have been routed to the City of Palo Alto Planning Department and the District for comment. The City, the District, and the general public will have the opportunity to comment on any potential impacts to the City of Palo Alto or San Francisquito Creek. East Palo Alto must respond to all comments, but is not bound to implement any of the recommendations. The adequacy of their environmental review and proposed mitigations, if any, are subject to judicial review.

8. **Please define "cfs" and "one percent flood."**

"Cfs" is an abbreviation of "cubic feet per second." The flow of water is measured in units of cfs.

The "one percent flood" is a flood event having an average frequency of occurrence of once in 100 years over a long period of time, or as having a one percent chance of occurrence in any given year.

9. **What was the frequency of the flood?**

See response to question number 6.

10. **How was the (one percent) flood map drawn? Do contour lines determine the limits of flooding? What are the other factors that affect the mapping?**

The one percent flood map was prepared by a contractor working for FEMA. The study usually starts with a statistical analysis of rainfall and streamflow records to estimate the magnitude of the one percent flood. Using computer models, the flood magnitude is tested with the capacity of the creek at numerous points. If the flood exceeds the creek capacity, overbanking occurs and a flood map is drawn using contours on a topographic map.

11. **Why has it taken 33 years to get around to addressing this (flooding) problem?**

After a small project was complete in the 1960s, there was little community interest in pursuing a project which would provide a higher level of flood protection.

12. **How do residents access data regarding the creek such as elevation maps, sewer system data, and creek capacities?**

The City of Palo Alto Public Works Engineering Division maintains maps and records of City infrastructure, including streets, sidewalks, and utility facilities. Public Works also maintains property information, including property boundaries, easements, and subdivision records. Public Works Engineering is located on the 6th Floor of City Hall, 250 Hamilton Avenue. The phone number is (650) 329-2151. Ground elevation information from the

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City's Geographic Information System as well as system maps and record drawings for the municipal storm drain system are available for public review in Public Works.

For information regarding creek capacities, contact Randy Talley at the District's Flood Management Policy and Planning Unit at (408) 265-2600. In addition, the City of Palo Alto maintains some information regarding creeks at the Public Works' office.

13. **How much will the study for San Francisquito cost? Five million?**

A good estimate in the CRMP Reconnaissance Report would be five-to-six million dollars over six years.

14. **How many homes would have flooded from the bay? Something should be done about the bay-front levees.**

There are at least 2,000 homes subject to flooding from an extremely high (one percent) tide. The District has sought assistance from the Army Corp of Engineers in the past; but, they did not identify a cost-effective project when utilizing their present guidelines. The District has requested that the Corps re-open their study and consider the additional risks involved with existing levees of dubious origin and integrity as was experienced by the central valley in the floods of 1997.

15. **I am concerned about the accuracy of the maps (on display at the meeting showing the limits of flooding). Should residents send in letters explaining what happened? The District should go to the public and ask for input about what happened.**

The District would appreciate any information that residents can provide regarding the flooding. Send information regarding the location, date, time, and depth of flooding to the attention of Randy Talley, Supervising Engineer, at the Santa Clara Valley Water District, 5750 Almaden Expressway, San Jose, CA 95118-3686.

16. **How can San Francisquito possibly not be on the priority list?**

The San Francisquito Creek flood problem is the highest priority in the District's Northwest Flood Control Zone, but prior to the February 1998 flooding, there was little community support for pursuing greater levels of protection since the interim work had been completed in the 1960s. Resources approved by the voters have been expended on other high priority projects (i.e., Matadero Creek, Barron Creek, and Adobe Creek) in the meantime.

17. **I do not recall anything on television or radio regarding the flooding. What is the mechanism to alert residents?**

Several local stations reported the National Weather Service (NWS) "Flash Flood Warning," including KCBS (740). The NWS has become very good about providing this information to the media, but it is up to the various stations to decide whether or not to broadcast the information. NWS broadcasts are also available on an inexpensive, commercially available Weather Radio. The District web site (scvwd.dst.ca.us) will also have emergency information and current stream levels.

In addition, see response to question number 18.

18. **What are the plans for warning the residents?**

The City of Palo Alto has developed an interim plan to monitor streamflow in local creeks and keep residents informed of high water levels. An informative brochure describing these interim measures was delivered or mailed to all residents in early March 1998. Automated creek monitoring devices have been installed in Adobe, Matadero, and San Francisquito Creeks. When creeks reach predetermined levels, creek level information will be broadcast to the public via local radio, cable television, the Internet, and a special telephone recording. Before creeks overtop their banks, police and fire staff will alert residents to high creek levels by driving through affected neighborhoods with sirens and loudspeakers. City staff will return to the City Council later this year with recommendations for further components of a comprehensive community alert system.

19. **A resident had two inches of water in their home. The floor is three inches above sea level. Where would the water come from during a one percent flood and how deep would it be?**

The flood depths will vary depending on the location of your property. Contact the City of Palo Alto Public Works Engineering Division to see maps with flood depths and elevations. See response to question number 12.

20. **The creek is not being cleaned out because we can not get approvals to clean the creek. Who are the people who are stopping the cleaning of the lower sections of the creek? Who can residents contact to get this rectified?**

The statement that the District can not get approvals to clean out the creek is not entirely accurate. In the sections of creek downstream of Highway 101, obtaining permits can be a lengthy process because of endangered species concerns. Nonetheless, permits from all the applicable regulatory agencies were obtained to excavate and remove sediment. In the fall of 1997, the District removed approximately 5,000 cubic yards of sediment from the San Francisquito Creek immediately downstream of Highway 101. During the February

1998 storms, approximately 3,000 cubic yards of additional sediment were removed from the same location.

In the sections of San Francisquito Creek upstream of Highway 101 where the District has right-of-way, the District routinely removes vegetation, debris, and downed or leaning trees that could trap debris during high flows. This work is performed under a memorandum of understanding with the California Department of Fish and Game. Because of red-legged frog concerns, clearances must also be obtained from the U. S. Fish and Wildlife Service.

21. **The responsibility (for San Francisquito Creek) lies with five cities, two counties, state agencies and the District. No collective body has risen to demonstrate an authority to regulate. Funding must come from the federal government.**

It is becoming increasingly difficult to attract the federal government's interest in building flood control projects. The District has been very successful with several federal projects throughout the valley, but many of these started years ago. Even with a federal project, it is likely that at least half the cost will still need to be locally funded. Presently, there are not enough local sources of long-term funding.

22. **Take interim steps to relieve the choke points at Chaucer, Middlefield, and Newell.**

Removing the bridges could be part of a larger project; but, without other features, just removing the bridges would simply move the flooding problem to a different breakout point.

23. **Where does the water go? We need to assess impacts of high tides on the storm surges as they discharge to the bay.**

Most floodwaters from San Francisquito Creek flowed toward the low-lying area near the bay and Highway 101. Floodwaters were eventually pumped back into the creeks through the City's storm drain pumping system, which is designed to pump against a somewhat higher tide or creek elevation.

24. **(Storm) drain systems are inadequate.**

New storm drain systems are typically designed to convey the storm runoff from a ten-year storm event. Palo Alto's storm drains, some of which are up to 75 years old, have capacities to convey flows ranging from a two-year to a ten-year storm, depending upon the specific location. The Palo Alto Public Works Department prepared an updated Storm Drain Master Plan in 1993. The plan outlines a $55 million program of capital improvements that would be required to increase the capacity of Palo Alto's storm drains to a ten-year storm standard. The City's storm water pump stations were upgraded in

1995 and 1996, and drainage improvements are currently under construction in the Barron Park neighborhood.

Storm drain improvement projects are funded through the storm drainage fee that appears on every property's utility bill. Funding for future projects will require an increase in this fee. Due to the passage of State Proposition 218 in 1996, the storm drainage fee cannot be raised without a special election of the ratepayers. City staff are currently developing a package of proposed storm drain improvement projects and an associated funding plan for submittal to the City Council and the ratepayers in the future.

25. Clarify who has control over the creek and who makes decisions about flood mitigation. (Comment from resident at Greer and Oregon Expressway.)

Many jurisdictions and property ownerships overlap along San Francisquito Creek, which forms the boundary between Santa Clara and San Mateo Counties.

Along the Santa Clara County side, the District has jurisdiction over the creek and has ownership or easement in some areas, but much of the creek is privately owned and the property owners have responsibility for the creek. The District is the agency formed to address flooding problems in Santa Clara County with community support and resources.

Along the San Mateo County side, the San Mateo County Flood Control District and/or local cities have jurisdiction over flood control.

26. Does the new Federal Emergency Management Agency (FEMA) flood insurance rate map consider the impacts that the soundwalls have upon flooding? Do the soundwalls at Highway 101 funnel flow towards the homes?

Ensign and Buckley Consulting Engineers, study contractor for the Flood Insurance Study of San Francisquito Creek, did consider the existence of the sound walls in their analysis for the re-study.

Based on the maps contained in a May 1998 study by Nolte and Associates, it appears that the topography of the ground surface upstream of Highway 101 causes water to flow east, towards Embarcadero Road. The soundwalls at Highway 101 do not appear to significantly impact the floodplain; however, additional studies would required to definitively address this question.

27. Does eminent domain give the District the authority to clean out the stream?

Eminent domain allows public agencies to pay for rights over real property when that acquisition is found to be in the public interest. A condition of doing so is that the property owner must be paid fair compensation. The District has not exercised its powers

of eminent domain for the purpose of performing stream cleaning. Assuming that this question is aimed at sections of creek where the District does not have legal title or right-of-way, provisions in the District's Ordinance 83-2 assign the responsibility to maintain those water courses to the owners of that property. Under an emergency, the District can provide flood control maintenance on private property to the extent of its resources and its ability.

The Board of Directors clarified its policy this year due to the high probability of higher than normal rainfall. In general, the District will not perform maintenance work on property where we do not hold a permanent right-of-way; however, exceptions can be made if such maintenance work is found to be in the public interest and primarily for the public's benefit. The following criteria are used by the District to determine if maintenance should be performed on private property:

- Maintenance work must result in flood-damage reduction to the community at large, as opposed to an individual property owner.

- Flow obstructions may be removed if it is likely that these obstructions will move under high flows and adversely affect District or public facilities.

- If the property owner has been notified of a violation of District Ordinance 83-2, and the work is essential to the health, safety, or welfare of the general public, the District may perform the work and seek reimbursement from the property owner.

- The District will not perform work on property owned by other public agencies.

- There must be safe and adequate access to the work site.

- Work performed by the District is limited to tree and debris dam removal; no sediment removal or permanent erosion repair work will be performed. Trees removed by the District shall have a clear and present likelihood of causing a debris dam. Trees should extend horizontally across the floodway and shall be greater that 12 inches in diameter. Debris dams removed by the District should be greater that 25 percent of the channel depth and obstruct greater that 75 percent of the channel width.

- Work on private property will be performed only after staff have determined that such work will not interfere with the District's flood control responsibility on properties where the District has right-of-way.

28. **Resident at 559 Greer Road had two inches of water throughout their home. At 1960 Edgewood, there was no water up to the sidewalk. Why did this happen?**

Most of the flooding in the Green Gables neighborhood was not caused by local runoff. Most of the damage was caused by water that overtopped San Francisquito Creek near Seneca and Chaucer Streets in north Palo Alto and flowed southeasterly across the city to the low areas around Embarcadero Road/Oregon Expressway/Highway 101. The land slopes naturally away from San Francisquito Creek, so properties near the creek (such as 1960 Edgewood Drive) are actually higher than those further away (such as 559 Greer Road). Many properties adjacent to the creek were not flooded at all, while low-lying parcels in neighborhoods far from the creek overbanking were heavily damaged by ponded water. Unfortunately, it appears that 559 Greer Road was damaged because of its low elevation and location in the path of the San Francisquito Creek flood waters.

29. **In earlier meetings, the District indicated that all (flooding) problems would be solved. There is a need to sort out all of the different floodplains and the source of all of these problems. We need to clarify (where flooding is caused by) saltwater, local drainage problems, and streamflow. (Comments from resident south of Loma Verde Avenue.)**

The reference to earlier meetings could be project-specific where alternative plans were being considered which could solve a particular problem area.

The District has a good understanding of the source and magnitude of most all the stream inadequacies or tidal flood threats. The City is responsible for local drainage systems.

30. **What can be done to solve all of the problems described in question number 29 (above)?**

The two primary remaining flood problems in the area are freshwater flooding from San Francisquito Creek and saltwater flooding from high tides in San Francisco Bay. They are related only because some (but not all) of the floodplain is common to both. The solutions are most likely independent, such as levees to hold back tide waters and some type of channel enlargement, diversion, or storage facility to control the stream floods. See the CRMP Reconnaissance Report for possible alternatives for San Francisquito Creek flood mitigation.

A copy of the CRMP report can be obtained by contacting Pat Showalter at the Peninsula Conservation Center Foundation at (650) 962-9876.

31. **In regard to the new FEMA mapping changes: have manmade changes impacted the floodplain? How come no one is standing up to take responsibility for improvements that have been made to the channel?**

The original FEMA maps were prepared based on studies completed in about 1980. The complete limits of the one percent floodplain, the flood hazard maps utilized by the District, and the latest 1998 FEMA flood map are substantially the same as the 1980 FEMA maps. Therefore, no significant changes to the floodplain have occurred over the last 20 years.

However, it is very likely that manmade changes completed prior to 1980 may have impacted the floodplain. No one party is responsible for changes to the channel. The party responsible for each channel modification is responsible to assess its impact on flood flows.

32. **What are the effects of high tide and storm surge? Would we still have had (flooding) problems even if the channels were clean?**

High tides would affect the flood hazard in the low-lying areas only. The flooding at points further upstream would have occurred regardless of the tide levels. The flooding occurred because of a record streamflow which was substantially greater than previous floods. See also the response to question number 20 related to creek cleaning activities.

33. **People should be aware of Proposition 218, which requires a two-thirds vote to approve new funding. Propositions 218 requires that a registered engineer assess the benefit of any work proposed. It will be a hard sell to get money (for flood management projects). This is a serious problem that is facing us.**

The passage of Proposition 218 has made funding future flood protection projects much more difficult. The District's present Benefit Assessment program, approved by voters in 1986, will sunset in 2000. A new funding source will be required to continue to provide flood protection to the communities in the District's Northwest Zone. The District's Board is presently considering how to shape a program for the years after 2000 and what options there may be to fund the program. One possibility would be a special tax measure which would require a two-thirds vote. The irony of the new two-thirds vote requirements is that we may be the victims of our own success. Since the present program began in 1986, the District has completed major capital projects and numerous remedial maintenance projects which have protected hundreds of properties. The owners of these properties may now have less incentive to vote for more taxes and projects.

34. **Can the District obtain photo reconnaissance maps from NASA to assist in the study?**

Preparation of a feasibility study and an Environmental Impact Statement will require considerable data. NASA maps and photos are one source of information which may be utilized.

35. **The land has been dropping over the past few years—this adds to the problem.**

Land subsidence has been a significant problem in Santa Clara Valley because of the practice of historically overdrafting the groundwater basin. Subsidence in Santa Clara County ceased in 1969 due to the District's groundwater recharge program. The past subsidence on San Francisquito Creek has been approximately 2.5 feet in the lower reaches of the creek, which does not significantly affect creek capacity. The District monitors ground levels at least once per year through an extensive survey to confirm that additional subsidence has not occurred.

36. **Stanford should be part of the study.**

Stanford is a participant in the CRMP and will be included in any future studies of the creek.

37. **Adobe Creek and Matadero Creek should be analyzed too.**

Matadero Creek has been analyzed, and a project has been constructed which provides protection from the one percent flood. Remedial work on Matadero Creek is now being planned to allow greater flow diversions from Barron Creek and provide one percent protection along Barron Creek.

Adobe Creek has been analyzed and a one percent flood protection project constructed from the San Francisco Bay to El Camino Real. The reach of Adobe Creek upstream of El Camino Real is currently under study with flood protection construction proposed to begin in 1999.

38. **Every household site in the hills should have a subterranean sump to slow the flow to the creek.**

The City of Palo Alto has enacted very rigid zoning requirements which limit the amount of development in the foothills and protect the natural environment. Building parcels must be a minimum of ten acres and the amount of impervious area is limited to 3.5 percent. Much of the land is zoned as parkland or open space and will never be developed. Land development applications in this sensitive area must go through a Site and Design review process, which includes review by the Architectural Review Board, Planning Commission,

and City Council. Building plans are reviewed to ensure that disturbance of natural vegetation, and drainage patterns are minimized in order to minimize erosion and promote infiltration of site runoff. Use of subterranean sumps to trap runoff may result in groundwater pollution or slope instability. The current strategy of protection of natural ground cover, limits on impervious area, and use of environmentally sensitive design practices is an effective way of reducing the amount of storm runoff from hillside development.

39. When was high tide?

The high tide predicted at the Golden Gate Bridge was 3.24 feet (National Geodetic Vertical Datum [NGVD]) at 4:24 a.m. on February 3, 1998. Correcting for the San Francisquito Creek area, a high tide of 4.8 feet NGVD would be expected to occur near the Palo Alto Yacht Harbor at 5:33 a.m. The highest tides for the month were predicted to occur on February 6, 7, and 8 with a corrected height of 5.0 feet NGVD.

It is important to realize that although the predicted times of high and low tides are fairly accurate, there are several other factors that contribute to the actual time and height of the tides; such factors include wind velocity and direction and barometric pressure. More than ninety percent of the actual observed tides are higher than the predicted tides, with three percent of observed tides over one foot higher than predicted levels. The National Ocean Survey prepares tide tables based on astronomic conditions, which account for only seventy percent of the influence on tidal action.